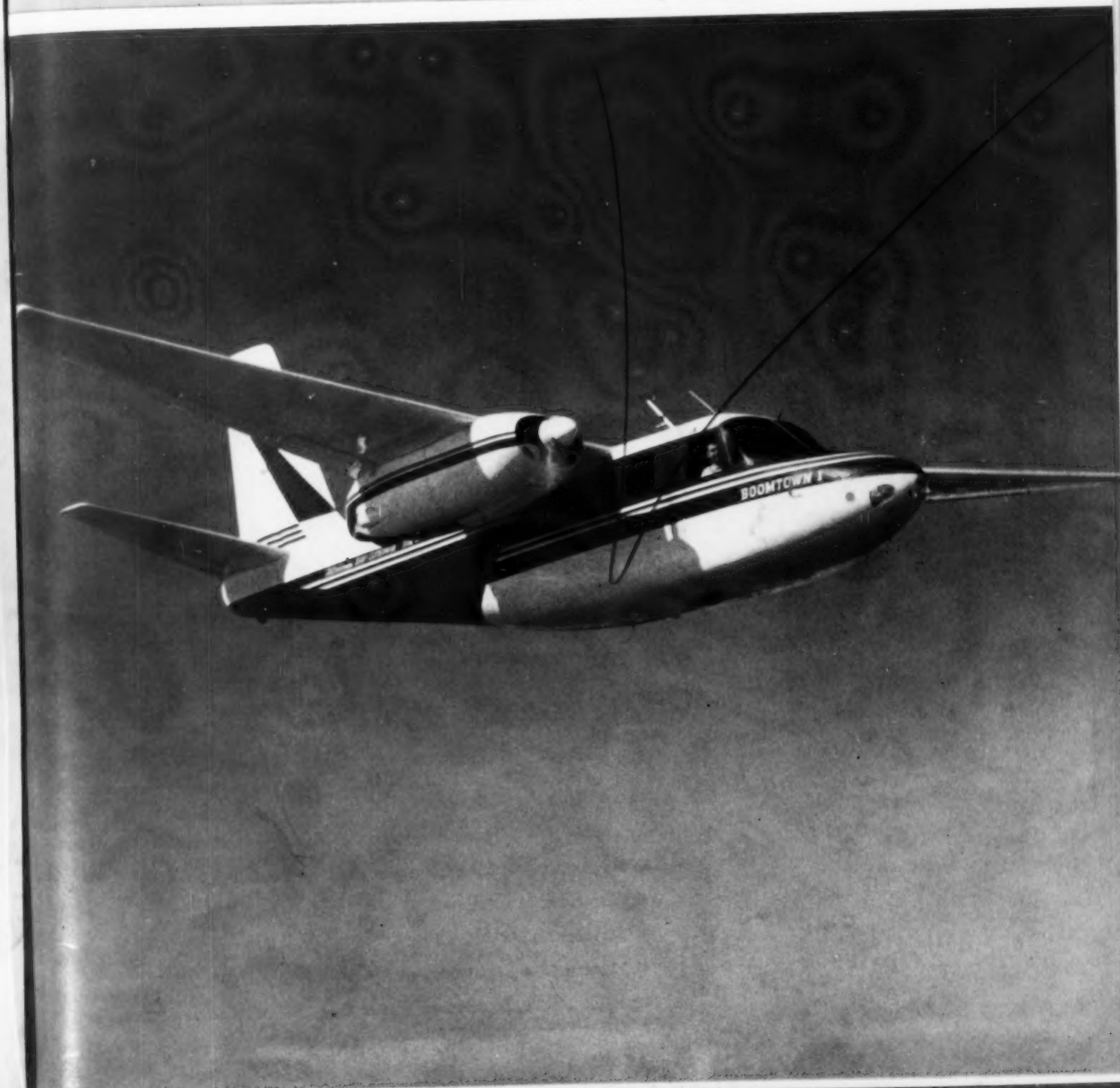
TECHNOLOGY DEPT.

FLIGHT MAGAZINE

OCTOBER 1957
50 Cents

PUBLIC LIBRARY
OCT 24 1957
DETROIT

vol 46 #10



AERO COMMANDER 560-E

Royal Swedish Navy Orders Vertol 44's

A special committee of the Swedish Navy made a year-long study of helicopters suitable for anti-submarine warfare as well as utility transportation. In the United States they consulted with headquarters personnel of the three armed services, visited helicopter manufacturers and toured military operating units.

At the conclusion of this intensive study, the Swedish Navy placed an initial order for four of the 22-place Vertol 44's, to be augmented later by additional procurement.

Official Navy announcement of the purchase said the choice was mainly based upon the Vertol 44's "good stability in hovering and towing missions, good instrument flight capabilities and mission endurance . . . practically unlimited controllability for the contemplated missions."

Sweden thus became the fifth western nation to purchase the sturdy Work Horse helicopter, first choice of the experts for the most difficult assignments.

In commercial or military use the Vertol 44 offers these features:

- Highest useful load, largest seating capacity
- Lowest seat mile cost
- Automatic stabilization
- Instrument flight capability

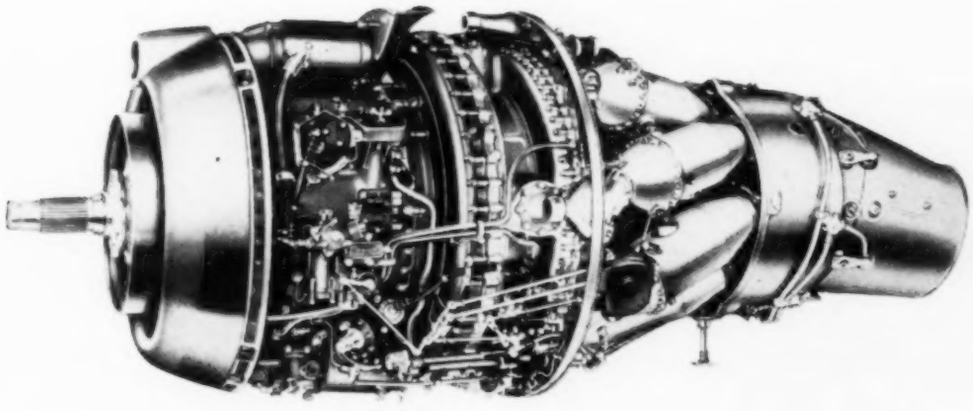
For detailed information write: Customer Relations Manager

VERTOL Aircraft Corporation

MORTON, PENNSYLVANIA

ROLLS-ROYCE
DART
PROP-JETS

POWER THE VICKERS VISCOUNT, THE FAIRCHILD F-27
AND THE AVIATION TRADERS ACCOUNTANT AND HAVE BEEN CHOSEN
FOR THE ARMSTRONG WHITWORTH 650,
THE HANDLEY PAGE HERALD AND THE GRUMMAN 159



For airline, local service carrier and executive operation, the Rolls-Royce Dart is the most proven prop-jet in the world. It has flown over 3,000,000 hours in scheduled airline service

ROLLS-ROYCE LIMITED, DERBY, ENGLAND

One in a series about users of Phillips 66 Aviation Products

Phillips 66 LOOKS AHEAD with WESTERN

To help build the West with its Fleet of the Future—this is the purpose of Western Airlines $48 million new-equipment program. Western, the nation's oldest scheduled air line, will take delivery of 11 more Douglas DC-6B's and 9 Lockheed Electras in the next 3 years. Western has applied for additional routes, indicated by the dotted lines on the map below, under its program for expanded service to keep pace with the growth of the dynamic West.

The new Electra, powered by Allison prop-jet engines, will bring still greater speed and comfort to travel between leading cities in Western America.

● Today, Phillips 66 Aviation Gasoline gives dependable, efficient performance to Western and other leading air lines, as well as to the military air services.

In step with the future, Phillips is a leading producer of *super-performance* Jet Fuels for the latest designs in turbo-props and jets. And Phillips research continues to lead the way for development of fuels for the aircraft of tomorrow.

AVIATION DIVISION • PHILLIPS PETROLEUM COMPANY • BARTLESVILLE, OKLAHOMA

AIR Report

Significant Trends and News

CAA ADMINISTRATOR PYLE says an industry committee has presented to him a plea for relief from unreasonable supplemental type certificate requirements in aircraft alterations and repairs. In a speech prepared for delivery during the National Business Aircraft Association convention in Denver, Pyle said: "I have assigned top level Washington technicians to continue working with industry groups toward a solution expediting and clarifying procedure for such approvals without compromising safety standards." "Such" approvals refer to supplemental type certificate approvals.

COMMERCIAL BEECHCRAFT SALES will approximate $36,000,000 for Beech Aircraft's fiscal year ended Sept. 30, this being about one-third of the firm's more than $100,000,000 in total sales for the period. John A. Elliott, secretary-treasurer, says Beech expects to do business at about the same rate during fiscal 1958. The 1957 fiscal total was about 35 per cent higher than that for 1956, when $74,539,000 in sales were reported.

BRITISH JET TRANSPORTS climbed back into the news in late September when 5 de Havilland Comets crossed the Atlantic westward, two of them nonstop Comet 2's of the RAF Transport Command. They were the first Comets to cross westbound nonstop, flying from Aldersgrove, Northern Ireland, to Gander, Newfoundland, and thence to Pinecastle, Florida, in support of RAF Valiant and Vulcan jet bombers. A third RAF Comet 2 flew from London to Keflavik to Goose Bay to Ottawa. Two Comet 1A's of the RCAF flew from Hatfield, England, to the Azores and on to New Brunswick and Ottawa. In addition to these five oceanic crossings, two Comet 2's are now operating with BOAC on proving services with freight in preparation for the introduction of 19 Comet 4 intercontinental airliners into BOAC service late in 1958. In all, there are now 14 Comets in operation and a 15th is engaged in development flights. Ten of the RAF are flying about 100,000 miles a week.

NATIONAL PILOTS ASSOCIATION has named Joseph P. Adams, former vice chairman of the Civil Aeronautics Board, its Washington representative and counsel. Adams holds a commercial pilot's certificate and is a colonel in Marine reserve aviation.

FIXED BASE OPERATION CONCESSION at Detroit Metropolitan Wayne County Airport is open to bids, which will be received on Oct. 21. Information may be obtained from the Board of County Road Commissioners, 7th Floor, City-County Building, Detroit 26.

CESSNA AIRCRAFT EXPORTS have totaled 250 airplanes to 28 foreign countries during the first half of 1957, 201 of them going to Argentina(76), Uruguay (60) and Mexico (29); 18 to Europe, 15 to the South Pacific, 11 to Africa, 4 to Asia and one to Iraq. By models, 69 were 180's, 68 were 182's, 58 were 172's, 26 were 170's and 19 were 310's.

A STUDY GUIDE TO ASSIST AIRLINE TRANSPORT PILOT applicants in preparing for the written examination has been completed by the CAA's examinations branch and is available for 20 cents from the department of Commerce, Washington, D. C.

HILLER 12-C SALES in five foreign countries have been announced by A. W. B. Vincent, vice president — commercial sales. The countries are Panama, Ecuador, Argentina, New Zealand and Canada.

FIRST COMMERCIAL SALES TOUR WITH VERTOL 44 COPTER TRANSPORT has created much interest in the petroleum industry after

FLIGHT MAGAZINE

OCTOBER, 1957 VOL. 46, No. 10

THIS MONTH'S COVER *is a new portrait of the Aero Commander 560-E in which Miss Jerrie Cobb, 26, flew 1,522 miles non-stop in 8 hrs. with standard fuel capacity from Guatemala City in Latin America to Oklahoma City for a new record. The 560-E has a range of 1,625 miles with 30-min. reserve, grosses 6,500 lbs. with a 2,200-lb. useful load and cruises 210 mph. on 70% hp. at 10,000 ft. It is powered by two 295-hp. Lycomings.*

—(Aero Design Photo by Wayne Entriken.)

Air Report—SIGNIFICANT TRENDS AND NEWS 5

Airmen's Calendar—COMING EVENTS 16

Just Among Ourselves—EDITORIALS: THE PILOT AS SAFETY ENGINEER; W. CURREY SANDERS; INVITATION TO DISASTER . . . 19

History in the Making—LOCKHEED'S MODEL 329, FIRST JET BUSINESS TRANSPORT TO FLY 26

Comanche Performance—FACTORY DATA FOR 160-MPH., 180-HP. LIGHTPLANE 29

Lightweight Lodestar—MORE IMPROVEMENTS FOR A BETTER LOCKHEED 30

The Airwork Operations Symposium—PRODUCTIVE TWO-DAY CONFERENCE HIGHLIGHTS ENGINE, ACCESSORY AND TRAFFIC PROBLEMS 32

Propeller Development for the Piper Comanche—BY WALT VOISARD—HOW McCAULEY PERFECTED A NEW PROP FOR A NEW AIRPLANE 34

Smaller But Better Radio—BY TOM ASHLEY—A VISIT TO THE DARE FACTORY IN OHIO 38

Cessna Formula: More Dealers, More Sales—PREPARATIONS FOR AN INTENSIVE SALES CAMPAIGN WITH FORTHCOMING 1958 MODELS 45

Small Radio-Radar Package—LIGHTWEIGHT RCA RADAR IN BEECH SUPER 18 54

New Business in the Hangar—NATIONWIDE ROUNDUP OF INTERESTING DEVELOPMENTS IN BUSINESS FLYING 58

GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; LOUISE ROBERTSON, Circulation; E. H. PICKERING, Consultant; P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas — Telephone TAylor 3-6191.

FLIGHT MAGAZINE, October, 1957, Vol. 46 No. 10. Published Monthly. Publication office, P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas. Price 50c single copy. Subscription rates: United States, one year $3.00; two years $5.00; three years, $6.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879.

Copyright, 1957, by Air Review Publishing Corporation.

demonstrations in New York, New Orleans, Houston, Dallas and Tulsa. The tandem-rotor, 1,425-hp. single-engine commercial version of the military H-21 "Work Horse" was used to lift oilfield equipment including a 4,115-lb. mud pump unit, heaviest part of a National Supply Company airborne drilling rig designed for helicopter transport. Landings were made on offshore drilling platforms in the Gulf of Mexico.

FIRST INTRA-STATE AIRLINE to order the big 4-engine Lockheed Electra propjet is Pacific Southwest Airlines, which has contracted for three Electras costing $8,000,000 with spares for service between San Diego, Los Angeles and San Franciso. Deliveries will be in late 1959.

PRICE REDUCTIONS IN SAFE FLIGHT SPEED CONTROL EQUIPMENT include from $345 to $245 for the Model SC-12 system for single-engine planes and from $695 to $495 for the Model SC-24 system for multi-engine aircraft. Increasing acceptance by military, corporate and private aircraft and engineering improvements have made possible the reductions, says Sale Flight Instrument Corp.

DELTA AIR LINES has launched an expanded cargo program designed to increase its all-cargo service 600 per cent within a year. It is using Curtiss C-46D freighters in the drive. Five of the transports have been converted by Delta into "Super 46D" versions, having 15,300-lb. maximum payload at a 49,990-lb. gross weight.

LOCKHEED T-33 JET TRAINER PRODUCTION has been extended into 1959 with a new $11,000,000 order, the 14th successive purchase of the trainer since 1948. Over 5,500 T-33's have been produced. They are the standard trainer for Air Force, Navy and Marines.

SPECIAL INSTRUMENT SHORT COURSE offered by Ross School of Aviation in Tulsa to members of the Flying Physicians Association drew immediate response and is being watched by others interested in the value of such a course all over the country. It is a 7-day course embracing 7 hours of Link trainer, 7 hours of flying and 40 hours of ground school. An "introduction to instrument flying," the course will empha-

4 Reasons Why - -

●Photo, courtesy of National Aircraft Corp., Burbank, California, shows their Model NA75 powered by Pratt and Whitney R985 engine.

PORUS - KROME Rates High
with Agricultural Aircraft Operators

PORUS - KROME
Resists Wear, Corrosion and Abrasion of Barrel Bores

PORUS - KROME
Increases Piston Ring Life Up to 50%

PORUS - KROME
Definitely Contributes to a Reduction in Lube Oil Consumption

PORUS - KROME
Definitely Contributes to Reduced Downtime for Engine Maintenance

write today for detailed information

DEPT. "J" VAN DER HORST CORPORATION, OLEAN, N. Y.

VAN DER HORST

OLEAN, NEW YORK
CHICAGO, ILLINOIS
HILVERSUM, HOLLAND
TERRELL, TEXAS
LOS ANGELES, CALIFORNIA*
*SparTan Engineering West Coast Affiliate

SWEPT-FORWARD AIR INTAKES feature the appearance of the new Republic F-105 Thunderchief, supersonic fighter-bomber. Sharp-edged intakes avoid "choking" from shock waves at supersonic speeds. Powered by J-75 engine of 15,000 lbs. thrust, F-105 is 63 ft. long, has wing span of 34 ft. 11 ins. and is 19 ft. 8 ins. high at the tail. Note pinched "coke bottle" fuselage shape.

Aero's Design for TODAY...

AERO'S PROGRAM FOR INCREASED PRODUCTION, world wide sales and service, was initiated months ago when construction of our new plant was begun.

TIME TABLE for a PRODUCTION Miracle!

SEPTEMBER: Plans accelerated to complete new plant weeks ahead of schedule.

OCTOBER: Installation of machinery and tools and manufacture of component parts begins.

NOVEMBER: Start fabrication of major aircraft assemblies.

DECEMBER: Delivery of aircraft for painting and modification.

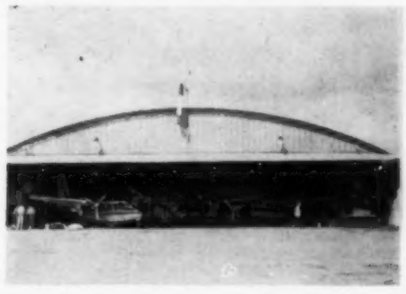
JANUARY: Begin customer delivery of NEW COMMANDERS, The World's Finest Executive Aircraft.

TODAY . .

AERO'S engineering research facility at Norman, Oklahoma is operating at peak efficiency.

TODAY . .

installation of equipment and instruments is on schedule at the modification center at Cimarron Field.



TODAY . .

as always AERO'S parts warehouse at Tulakes is completely stocked with Commander parts. Every service requirement is being fulfilled promptly.

AERO Commander

"THE CHOICE OF MEN AT THE TOP"

AERO DESIGN & ENGINEERING CO TULAKES AIRPORT, OKLAHOMA CITY

HELP
For Engineers!
STANPAT—the remarkable tri-acetate that is pre-printed with your standard and repetitive blueprint items, easily transferred to your tracings by an adhesive back or front. Relieves time-consuming and tedious detail of re-drawing and re-lettering specification and revision boxes, standard symbols, sub-assemblies, components and cross-sections. Saves hundreds of expensive hours of drafting time and money, frees the engineer for concentration on more creative work.
SO SIMPLE TO USE:
1 PEEL the tri-acetate adhesive from its backing
2 PLACE the tri-acetate in position on the tracing.
3 PRESS into position, will not wrinkle or come off.
Stanpat Co.
WHITESTONE 57 N.Y. U.S.A.
STANPAT CO., WHITESTONE 57, NEW YORK, U.S.A.
Dept. F-10, Phone: FLushing 9-1693-1611
Please quote on enclosed samples.
Kindly send me STANPAT literature and samples.
Name
Title
Company
Address
STANPAT CO.
Whitestone 57, N. Y.
U. S. A.

size non-instrument limitations and will enable a pilot to protect himself in case of a climb or letdown through the overcast and to make a simple omni approach. Time spent in the course will count 100 per cent toward an instrument training course for any of the flying physicians desiring the advanced training. The introductory course, given to 15 pilots in a class and utilizing the physicians' own aircraft, costs $150.

GENERAL MOTORS' ALLISON TURBO-LINER has logged over 1,000 flights and has carried more than 6,000 persons aloft. It is a Convair 240 converted to Allison propjet engines of the YT38, YT56, T56 and commercial 501-D13 models, all driving Aeroproducts turbo-propellers. The Turbo-Liner will hold a 3,000-ft. per min. take-off rate of climb all the way to 17,000 ft. and cruise at 300 mph.

ONE-STOP FERRY HOPS ACROSS THE ATLANTIC OCEAN are becoming common for Beechcraft Twin-Bonanzas being delivered abroad, with the Azores being used after take-off from Gander—a 1,600-mile hop. For the deliveries, Twin-Bonanzas are equipped with two auxiliary fuel tanks totaling 110 gals. in capacity, boosting flight endurance to more than 12 hours. On a recent delivery to Africa, two supercharged E50 Twin-Bonanzas were flown via the Azores, the second leg to Morocco being 1,100 miles.

A NEW SMALL 55-HP. VARIABLE-SPEED GAS TURBINE ENGINE for military "flying platforms" is being developed by Solar Aircraft, San Diego. An adaptation of the

(Continued on page 16)

GERMAN PORSCHE AUTO ENGINE powers this Gyrodyne XRON-1 rotorcycle for the Navy. Gyrodyne Company, St. James, N. Y., is arranging with the German manufacturer to supply airworthy-certificated engines for commercial-type rotorcycles in 1958.

READ THE FINE PRINT

before you buy a so-called autopilot

Does it have . . . ?	Device A	Device B	Device C	Device D	L-2 AUTO-PILOT
COMPLETE 3-AXIS CONTROL—AILERONS, ELEVATOR, RUDDER					✓
PRECISE, LONG-TERM HEADING HOLD, BY DISPLACEMENT (DIRECTIONAL) GYRO		✓		✓	✓
FULLY AUTOMATIC HEADING LOCK—NO NEED TO PRE-SELECT HEADINGS					✓
INSTANTANEOUS SERVO RESPONSE			✓	✓	✓
PROPORTIONAL SERVO RESPONSE	✓	✓		✓	✓
FOLLOW-UPS—PREVENT OVERSHOOT, PERMIT USE OF HIGH-POWER SERVOS					✓
AUTOMATIC PITCH TRIM			✓		✓
ALL-ELECTRIC CONTROLS—NO MECHANICAL ENGAGE-DISENGAGE, NO DELICATE VALVES			✓		✓
AUTOMATIC ALTITUDE CONTROL AVAILABLE					✓
AUTOMATIC ILS APPROACH COUPLER AVAILABLE					✓
THOROUGHLY PROVED—2000 IN USE DURING EIGHT-YEAR PERIOD					✓
CAA-CERTIFICATED FOR ALL LEADING AIRPLANES, S.E. & TWIN (19 MODELS)					✓
YAW DAMPING	✓				✓
VISUAL DIRECTIONAL & ATTITUDE GYRO REFERENCE		✓		✓	✓

This tabulation of essential autopilot features was gathered from manufacturers' specifications, current as of September 15, 1957

ONLY the L-2 performs *all* the functions f a completely automatic pilot for single ngine airplanes and the light twins.

LEAR L-2 **AUTOPILOT**

NOW AT A NEW REDUCED PRICE

EE YOUR DISTRIBUTOR OR WRITE: LEAR INC., LEARCAL DIVISION, 3171 SOUTH BUNDY DRIVE, SANTA MONICA, CALIFORNIA

SPERRY C-2
GYROSYN COMPASS

- does not drift
- requires no resetting
- electrically driven
- 3⅛" panel mounting
- 8 lbs. total weight

SPERRY H-5
GYRO-HORIZON

- non-tumbling
- can be used 30 seconds after power application
- electrically driven
- 3⅛" panel mounting
- 2½ lbs. total weight

How much does it cost to fly with instruments of airline accuracy?

The cost is surprisingly small. Especially when you compare it with the investment your business aircraft represents.

The benefits of flight with the Sperry C-2 Gyrosyn* Compass and the Sperry H-5 Gyro-Horizon are a matter of practical business. Modern aircraft need modern instrumentation to fly straighter courses and for more accurate navigation.

The Sperry C-2 Gyrosyn Compass, in contrast to air-driven models, does not drift – requires no resetting. You fly straighter courses, thus reducing flight time and also flight cost.

The Sperry H-5 Gyro-Horizon is also more reliable than air-driven models. It is non-tumbling and can be used just 30 seconds after power application.

Both of these instruments are small, lightweight and engineered for accuracy with Sperry's traditional precision. Both are used where accuracy of schedules and safety are vital – with the world's major airlines. Here they have demonstrated thousands of hours of trouble-free performance.

For further information write our Aeronautical Equipment Division, or nearest district office.

*T. M. REG. U. S. PAT. OFF.

AERONAUTICAL EQUIPMENT DIVISION

SPERRY *GYROSCOPE COMPANY*
Great Neck, New York

DIVISION OF SPERRY RAND CORPORATION

CLEVELAND • NEW ORLEANS • BROOKLYN • LOS ANGELES
SAN FRANCISCO • SEATTLE. IN CANADA: SPERRY GYROSCOPE
COMPANY OF CANADA, LIMITED, MONTREAL, QUEBEC

1,000 Beavers are in service

More than a thousand Beavers are now in service, their bases spread over the seven continents. They operate in every extreme of climate and in a wide diversity of civil and military roles.

Fitted with wheels, floats, skis, or amphibious gear, they operate from small airstrips, lakes or rivers. (The landplane take-off run is less than 600 feet.)

These rugged, hard-working trucks of the air can carry six passengers, or over half-a-ton of freight, for a distance of five hundred miles.

Designed and built by

THE DE HAVILLAND AIRCRAFT OF CANADA LIMITED

POSTAL STATION "L", TORONTO, ONTARIO

One of the nicest things about Omni, compared with the old LF four-course ranges, is the fact that Omni radials pretty much stay put. No wildly bending beams near water, mountains or at sunset, and no multiple signals.

Because Omni provides so much more accurate navigational guidance, it has been possible to designate airways closer together. This, in turn, has wisely necessitated a requirement that airborne VOR receivers be periodically checked if used for IFR operations. CAA regulations call for an accuracy check both every 10 hours of use of the VOR equipment and every 10 days. These checks are not only a requirement for IFR operations but good practice for anyone who navigates basically by VOR.

There is a choice of four simple check procedures which may be followed:

1. *Radiated Test Signals.* At certain major terminals radiated test signals are operated continuously (LaGuardia on 108.6 mc; Kansas City on 113.0, for instance). With the deviation needle centered and the "to-from" needle reading "from," the Omni-bearing selector should read 0°. With a "to" reading and needle centered, the bearing should be 180°. Plus or minus 4° allowed.

2. *Ground Check.* At airports close enough to VOR stations, certain ground check points are designated by signs adjacent to taxi-ways with the correct radial shown. Plus or minus 4° allowed.

3. *Airborne Checks.* CAA Certified Airborne Check Points have been established near many airports over prominent landmarks with the correct Omni-bearing indicated in the Flight Information Manual.

In the absence of a certified check point, select a VOR radial lying along the centerline of an established Victor airway, choose a prominent ground check point preferably 20 miles away and fly over it at reasonably low altitude. Accuracy for airborne checks should be within plus or minus 6°.

4. *Dual Omni.* If you have dual Omni, tune both units to the same station. If the bearings are within 4 degrees of each other you're OK.

Can't help but add that with the Narco Omnigator Mk II or the Narco VOA-3 Omni Converter, you should be well within limits every time. These units leave the factory with a certified accuracy of better than plus or minus 2° and have carefully engineered circuitry to provide stability for prolonged bearing accuracy.

Nancy

NARCO • Fort Washington, Pa.

P. S. If you haven't seen the new Narco "How to Fly Omni" booklet, just write me for your FREE copy.

Need more frequencies?

. . . FOR BETTER TOWER, EN ROUTE AND DIRECT CENTER COMMUNICATIONS

Add the narco SIMPLEXER
27 CHANNEL VHF TRANSCEIVER

The Narco 27-channel Simplexer is business aviation's most popular communications transceiver. With its broad-band transmitter (118 to 126.7 mc) the Simplexer accommodates 27 crystals covering every channel needed for normal IFR operations. "Whistle-stop" feature gives quick, crystal-calibrated tuning for simplex transmission with center, tower or ATCS. Compact size permits convenient installation. Thousands of Simplexers are in daily use. Just the answer for that extra communications unit you need while working VOR or ILS.

AND NOW! *narco* VTA-3
27 CHANNEL TRANSMITTER WITH "WHISTLE-STOP" TUNING FEATURE

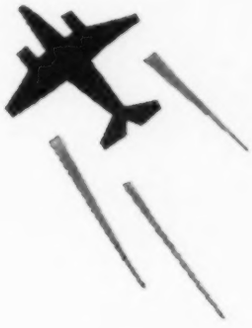
Now, multiply transmitting channel capacity with little weight penalty and lowest cost with the new Narco VTA-3, 27-channel VHF transmitter. VTA-3 can be used with own power supply as independent unit or in conjunction with Narco Omnigator or Simplexer. Available in low-band version (118 to 123 mc) or high-band version (121.5 to 126.7 mc).

"Whistle-stop" feature provides positive, crystal-calibrated tuning of any VHF receiver in the airplane.

You'll enjoy the convenience of the extra 27 channels provided by either the Simplexer or VTA-3. Bring your communications up to date with one or both of these fine Narco units. See your Narco dealer or write for brochure.

narco

NATIONAL AERONAUTICAL CORP., FORT WASHINGTON, PENNSYLVANIA



ST. LAWRENCE OR RIO GRANDE *Esso is there . . . at 600 airports from Maine to Texas!* Even business trips are pleasure trips — when you make a habit of putting down where there's an Esso Aviation Dealer. They're world-famous for their fine service (and, of course, for their fine Esso fuels and lubricants too!) And here's a smart tip: get an Esso Aviation Credit Card. It's your passport to charge-account convenience with *any* Esso Aviation Dealer. Lets you charge gasoline, oil and lubrication *plus* tire and battery service, landing fees, overnight in-transit storage and minor emergency repairs.

FREE TO PILOTS! For your free copy of "You and Instruments" by Col. Duckworth, packed with important information, be sure to see your nearest Esso Aviation Dealer.

ESSO

PURCHASE | LEASE | CHARTER

which fits your business?

Maybe it hasn't occurred to you how simply and economically your company can put a Bell helicopter to work.

Say, for example, you're a manufacturer with satellite plants — how many valuable hours each month, you ask, could key men save making their rounds by Bell? Or if your company sells in scattered, hard-to-reach markets — how many new orders could field men bring home by those frequent calls possible only with the Bell helicopter?

How do you find such answers? By doing as hundreds of other cost-conscious imaginative companies have — *by actually trying the remarkable Bell in your own business.*

Three convenient ways are open to the prospective Bell user: (1) Outright Purchase, (2) Bell Lease — Purchase Plan, (3) Charter. Any of the three will show you quickly how the Bell Helicopter saves money, makes money, far beyond its capital investment. We'll be happy to send you all the facts about each, plus case histories of present Bell users. Write us today. Department 3E, Bell Helicopter Corporation, Fort Worth, Texas.

Watch "WHIRLYBIRDS" on TV . consult your local paper for time and station.

BELL Helicopter CORPORATION

Fort Worth, Texas

Subsidiary of Bell Aircraft Corporation

*Dr. M. A. Lemmons, O.D., Ozona, Texas . . . another Mark 20 owner.

COMPARE & DISCOVER

COMPARE the Mark 20 with other four-place executive airplanes.

DISCOVER why the Mark 20 is years ahead in styling and performance.

	Mark 20	Plane Type 82	Plane Type 72	Plane Type TP
PERFORMANCE				
Cruising Speeds (70% h.p.)	165 mph	155 mph	124 mph	128 mph
Engine h.p.	150 hp	230 hp	145 hp	150 hp
Range	900 miles	655 miles	620 miles	525 miles
Pay Load	720 lbs.	679 lbs.	673 lbs.	669 lbs.
Rate of Climb	900 ft./m	1030 ft./m	660 ft./m	725 ft./m
Service Ceiling	17,200 ft.	19,800 ft.	13,330 ft.	15,000 ft.
SAFETY				
Military proven low-wing visibility	Yes	No	No	No
Tubular steel safety cabin	Yes	No	No	Yes
All-weather adjustable engine cooling system.	Yes	No	No	No
Non-fatigue spruce wing	Yes	No	No	No
ECONOMY				
Miles per gallon	20	12.7	15	14.7
Cost per engine hour of operation (Based on engine exchange prices)	$1.00	$3.45	$1.50	$ .93
Fuel cost per mile	2c	2.8c	2.4c	2.6c
Total cost per mile (Based on 600 hours operation per year)	6.6c	9.8c	8.2c	8.3c

In the Mark 20 you get these EXTRA VALUES—

- ★ Only executive plane with flexible-design wing
- ★ Wide tread landing gear—over nine feet
- ★ Greater visability
- ★ Maintenance-free tricycle landing gear and flap system
- ★ Low center of gravity for ease of handling on ground and in strong cross winds

You get all the advantages of years-ahead styling and performance with the **Mark 20**—the first really new executive airplane in many years.

*An optometrist with offices in Ozona and Big Lake, Texas. Dr. Maurice A. Lemmons has 2500 hours of flying time with 75 hours in a Mark 20.

MOONEY AIRCRAFT INC., KERRVILLE, TEXAS

Mooney wants comparisons. Mooney wants you to be the judge. Yes, you get more in a Mark 20 . . . ask a Mark 20 owner! Priced at $13,750.00. Distributors throughout U.S.A. and in many foreign countries.

MOONEY AIRCRAFT, INC., Kerrville, Texas

I am interested in ☐ purchasing a Mark 20
☐ Mark 20 sales franchise.
☐ Information on the Mark 20.

Name

Address

City and State

AIR REPORT

(Continued from page 8)

Solar constant-speed YT-62, which is for a one-man helicopter and is the world's smallest gas turbine aircraft engine, the new engine is the YT-66 and will weigh only 50 lbs. and have a maximum diameter of only 15.5 inches and maximum height of only 22.5 ins.

A NEW HIGH-STRENGTH STAINLESS STEEL for aircraft and missile skin and structural parts will be useful at speeds up to 2,700 mph. without damage from air friction heat. It is known as Armco PH 15-7 Mo.

FIRST PRODUCTION-MODEL TEMCO TT-1 PRIMARY JET TRAINER off the assembly line in Dallas has been accepted by the Navy for a series of ground and flight tests.

A 250-HP. LYCOMING O-435 ENGINE in a Hiller H-23D Army helicopter has been operated 750 continuous hours in a helicopter tie-down test to set a new helicopter engine endurance record. Lycoming said it was subjected to severe conditions including the use of full power in overspeed conditions for 10 per cent of the test time and was operated predominantly at near maximum engine output. Vibration was especially severe with the helicopter tied to a stand and the rotor operating continuously in ground effect.

Airmen's Calendar

Oct. 12-19—9th Annual All-Texas Air Tour, covering 3,000 miles and 36 stops. Address correspondence to Texas Air Tours, 307 Walton Bldg., Austin, Tex.

Oct. 20-22—4th Annual Western Forum of American Helicopter Society, Statler Hotel, St. Louis. Forum Chairman is Marvin D. Marks, McDonnell Aircraft Corp., Lambert Field, St. Louis.

Oct. 22-24—Annual Piper Aircraft Distributor Sales Meeting, Lycoming Hotel, Williamsport, Pa.

Nov. 1-3—Dallas Air Fair, Addison Airport, Dallas.

Nov. 7-8—National Meeting, Weapons System Management, Institute of Aeronautical Sciences, Statler Hilton Hotel, Dallas.

Nov. 11-15—9th Annual International Air Safety Seminar, sponsored by Flight Safety Foundation in cooperation with Coast Guard and USAF Military Air Transport Service.

Nov. 12-13—7th Aircraft Hydraulics Conference, sponsored by Vickers, Inc., Park Sheraton Hotel, Detroit.

Nov. 13-15—Annual NATA Convention, Hotel Adolphus, Dallas.

Nov. 15—National Pilots Association Annual Convention, Hotel Adolphus, Dallas.

Nov. 18-20—Annual Beech Distributors Meeting, Wichita.

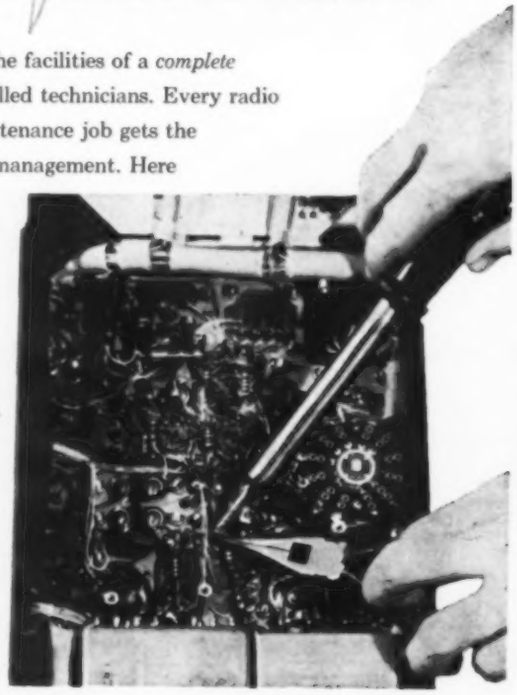
Nov. 20-22—ADMA's 30th Meeting, Sheraton-Cadillac Hotel, Detroit.

Dec. 16-18—Air Traffic Control Symposium, "Mission and Methods of the Airways Modernization Board." For information, write Air Traffic Symposium, Franklin Institute Laboratories, 20th and Parkway, Philadelphia 3, Pa.

at Aero of Atlanta!

skilled hands make the difference!

Aero Corporation offers you the facilities of a *complete* electronics shop staffed by skilled technicians. Every radio and radar installation or maintenance job gets the personalized attention of the management. Here is another reason why more and more executive planes are being brought to Aero Corporation for complete service.



SPECIALIZED SERVICES... FACILITIES

Engineering	X-ray
Modification	Electronics
Overhaul	Hydraulics
Maintenance	Interiors
Line Service	Painting

For further information call or write

AERO CORPORATION

ATLANTA AIRPORT • POplar 1-7721 • ATLANTA, GEORGIA

NEW AIRPORT FOR BUSINESS FLYING was opened last month in Dallas when this Aero Commander was the first plane to land at the new $2,000,000 Addison Airport. Left to right are W. D. DeSanders, a director of the airport company; Guy Dennis, on whose farm the airport was built; Walt Mims, Delhi-Taylor Oil pilot, and Bill White of Brown Aero, Commander distributors.

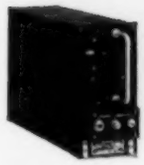
90 channel, 3 inch diameter VHF transmitter...

of Collins new lightweight communication-navigation equipment line for business aircraft

This is Collins new 17L-8 VHF transmitter. A big performer in a small package. It's a 3 watt transmitter in a 3" instrument case 8-11/16" long which mounts on the instrument panel. Weight is only 5 pounds, including separate modulator power supply which can be mounted anywhere without shockmounts. There are 90 crystal-controlled channels (118.0 to 126.9 mc) with 100 kc spacing. Transistorized modulator for 90% modulation with carbon mike. The 17L-8 is a truly outstanding VHF transmitter of airline quality, light enough, compact enough for even the smaller aircraft. A companion receiver will be available soon.

Collins CREATIVE LEADER IN AVIATION ELECTRONICS COLLINS

See your Collins authorized dealer or distributor.
Many new ones are now being appointed.



51X-2 VHF Communication Receiver

880 50 kc crystal-controlled channels from 108.0 to 151.95 mc. Short 3/8 ATR. Weight 10 lbs. Self-contained power supply. Provides complete VOR and localizer operation when used with 344B-1 VOR instrumentation unit.

51Z-2 Marker Beacon Receiver

Weighs only 4.5 lbs. Provides aural and visual indication of passage over a 75 mc marker beacon. Modularized. Only 5 tubes. Available in single or three lamp configuration. 1/4 short ATR.

DF-201 ADF System

Provides automatic or manual DF, AM, CW, or range reception. Complete system including receiver, loop antenna control unit and shockmount weighs only 29.4 lbs. Continuous electrical tuning from 90 to 1800 kc utilizing digital indicator.

17L-7 VHF Communication Transmitter

Companion to the 51X-2. 680 50 kc crystal-controlled channels from 118.0 to 151.95 mc. Maximum frequency change time, 4 seconds. Weight: 14 lbs. including integral power supply. Short 3/8 ATR.

51V-3 Glideslope Receiver

20 crystal-controlled channels incorporating motor driven crystal switches for increased reliability. Weight only 6.4 lbs. Short 1/4 ATR. With 51R navigation receiver fulfills all ILS glideslope and localizer requirements.

FD-104 Integrated Flight System

Presents basic attitude, navigation situation and steering information to pilot on two easy to read instruments. Forward view presentation on Approach Horizon. Plan view on the Course Indicator. Weight: 30.6 lbs.

SAC Silver Jubilee Newsreel

BY JACK PATTON

STILL UP FRONT
SPELL JET WITH A G OR J ?
SAC IN LATE '54 BID ON THE AF's FIRST JET ENGINE O'HAUL CONTRACT.
THE WINNAH ..... SOUTHWEST AIRMOTIVE!
WRIGHT FIELD
WE SUCCEEDED IN ONE OF THE BIGGEST STEPS IN PRIVATE AVIATION HISTORY
WE DID IT!
I'M SLEEPY
AFTER BUT 150 DAYS OF 'ROUND-THE-CLOCK LABOR SACSTERS TESTED ENGINE #1
YOU BOYS'VE NEVER LET US DOWN!
THE JET AGE AT SOUTHWEST NOW IS A BIG AND EFFICIENT REALITY.

Since 1955, America's first and only commercial, non-manufacturing jet engine overhaul facility.

Opening this year, America's first jet-age business flying terminal.

1932 —A QUARTER CENTURY OF LEADERSHIP— 1957

Southwest Airmotive Co.

LOVE FIELD DALLAS

DIVISIONS: KANSAS CITY, KANSAS / DENVER, COLORADO

Just among ourselves

The Pilot As Safety Engineer

IF you attend any of the current pilot-owner meetings or seminars you soon realize a basic weakness in civilian flying these days is the failure of so many pilots to sit down and absorb all the information available to them in the manuals put out by the engine, airframe and accessory manufacturers. We've attended three such meetings in as many months and were astounded by the ignorance of ordinary pilots as revealed by their questions.

Perhaps this ignorance on the part of so many pilots is reason enough for holding pilot meetings.

If the men at the controls refuse to keep abreast of the best operating and servicing procedures as outlined in the manufacturers' manuals, then the only way they can be reached is by occasional meetings with technically qualified people representing the engine, airframe and accessory people.

To illustrate the case, a well-attended and highly productive meeting held last month in the eastern part of the country developed quite a discussion on the subject of thermal shock. Competent engine company representatives thoroughly covered the subject and the subsequent question period filled in all the gaps. At the end of the discussion a hand went up by a questioner who asked, "What is thermal shock?" It was evident that came from a lad who didn't fly behind engines to which thermal shocking applied. But it does seem fantastic he hadn't even heard of the practice. Likewise, questions on the proper use of mixture control revealed a tremendous amount of ignorance on leaning-out procedures and the basic principles involved in engine care. The very poor quality of the questions asked during these currently popular pilot meetings should be of considerable concern to all those agencies and companies deeply involved in the future of this business.

Most of us are well aware of the tremendous safety record chalked up by the professional corporate pilots. As Admiral John Cassady recently pointed out at a regional Flight Safety Foundation business aircraft safety

(Continued on page 52)

W. Currey Sanders

W. CURREY SANDERS, 57, widely-esteemed Louisiana airman, whose pioneering leadership influenced national development and acceptance of business and corporate flying, died last month of intestinal blockage while on a hunting trip in Wyoming. He was Beechcraft distributor at Shreveport for North Louisiana, East Texas and South Arkansas.

Currey was Mr. Aviation to literally thousands of pilots and others in and out of aviation, who knew him affectionately as "Pappy." A pilot for forty years, having obtained his instruction from the Army in 1918, his selfless devotion to making aviation and the people in it worthwhile endeared him to business and civic leaders as well as those who worked with him. He always placed the interests and welfare of others ahead of his own.

His contributions in air work included pioneering in agricultural aviation here and in South America for the original Huff-Daland Dusters. This struggling enterprise became Delta Air Lines, which still operates a crop dusting division. He helped make the old Wedell-Williams Airlines a success with his hard work. In the lean and hungry beginnings of making a business of private and executive airplane utilization, he roughnecked in the oil fields to keep both planes and friends flying. He not only succeeded in putting businessmen, most of them oil operators, into private plane ownership but never relinquished personal responsibility for the pilots and equipment he developed and recommended for them. This, in the early Thirties, was the very beginning of business flying and executives all over the country have relied on Currey's conscientious advice ever since.

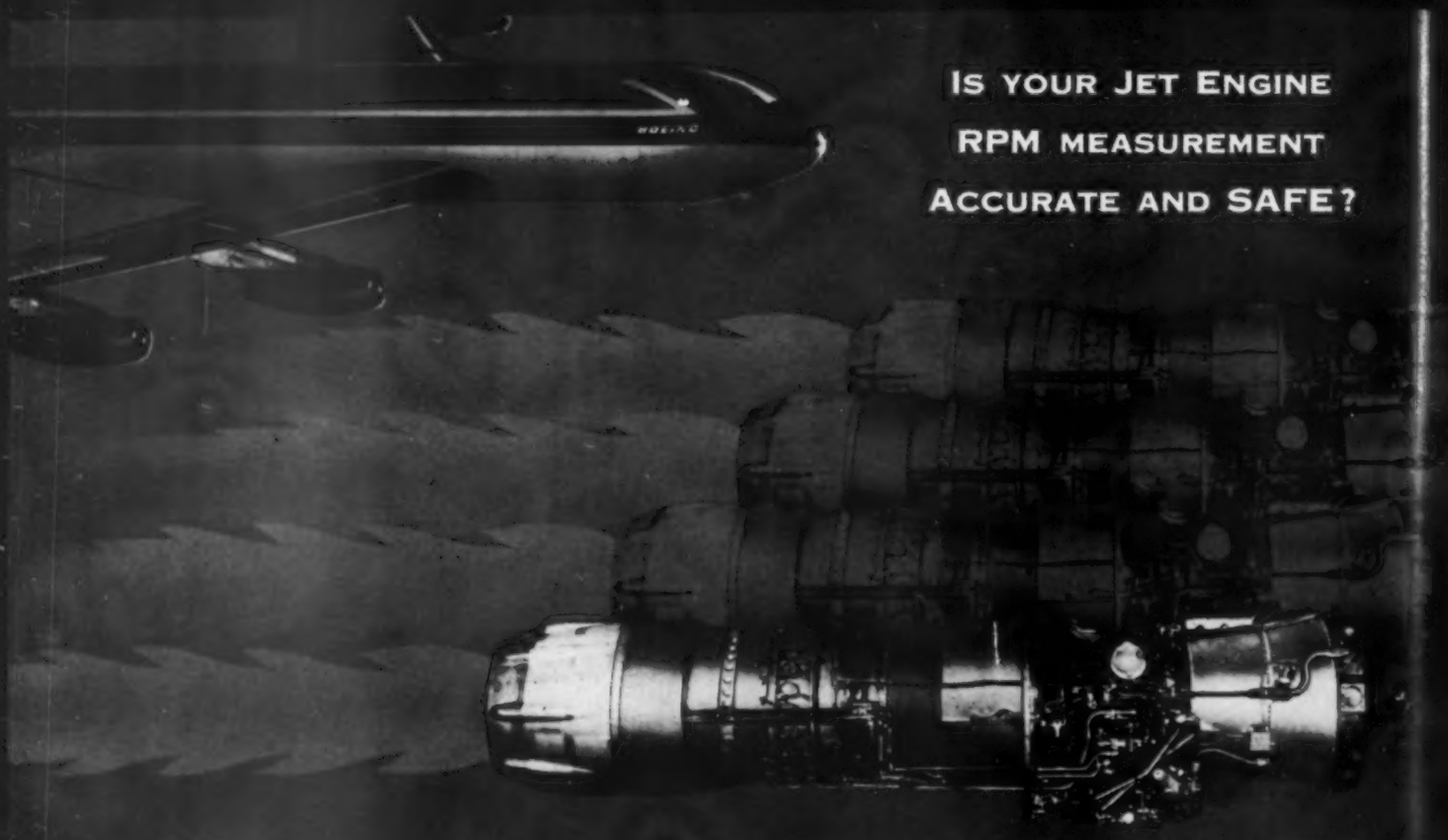
—(Beech Photo.)

W. Currey Sanders

His efforts were responsible for numerous corporations to adapt the first multi-engine transports to executive flying and in each case Currey mapped stringent airline-type piloting and equipment requirements which made these operations safe and dependable. His experience contributed to military aircraft refinements when he served as assistant chief pilot for Lockheed before and during World War II, supervising important flight test activities and the ferrying of large quantities of Lockheeds overseas.

But friends and admirers will remember Currey Sanders most as a gentleman in the finest sense of the term, never known to compromise a principle. Many pilots are proud to be known as "Currey's boys" because of the guidance he lavished on them outside as well as in the cockpit. Although modest, he was known and respected for his deep religious convictions and his reliance on faith and prayer inspired others to look to their own needs for salvation.

Aviation in general and the people who knew Currey Sanders are better off for his genuine devotion and sacrifices in their behalf. ★ ★ ★



IS YOUR JET ENGINE RPM MEASUREMENT ACCURATE AND SAFE?

TAKCAL®

READS JET ENGINE SPEED to GUARANTEED ACCURACY of 10 RPM in 10,000 RPM (±0.1%)

The inter-relation of RPM to efficiency and thrust in jet engines is fundamental. Proper adjustments for maximum thrust, maximum engine life and maximum safety of operation can be made only upon accuracy of instrumentation. The TAKCAL tests to guarantee that accuracy.

The new B & H TAKCAL incorporates a refinement of the frequency meter principle. It operates in the low (0 to 1000 cps) range, reading the frequency of the tachometer generator on a scale calibrated in percent RPM corresponding to the engine's RPM. It reads engine speed while the engine is running with a guaranteed accuracy of ±0.1% in the range of 0 to 110% RPM. Additionally, the TAKCAL circuit can be used to trouble-shoot and isolate errors in the aircraft tachometer system, with the circuit and tachometer paralleled to obtain simultaneous reading.

The TAKCAL's component parts are identical with those used in the J-Model JETCAL Analyzer. They are here assembled as a separate unit tester and for use with all earlier models of the JETCAL Tester.

The TAKCAL operates accurately in all ambient temperatures from –40°F. to 140°F. Low in cost for an instrument of such extreme accuracy, it is adaptable to application in many other fields.

For full information write or wire...

CHECKS TACHOMETER "SYSTEM" ACCURACY.
ADAPTS TO ANY FREQUENCY PROBLEM!
Explosion-proof TAKCAL for special applications. Measures 200 to 7500 RPM, direct reading, with ±0.1% accuracy.

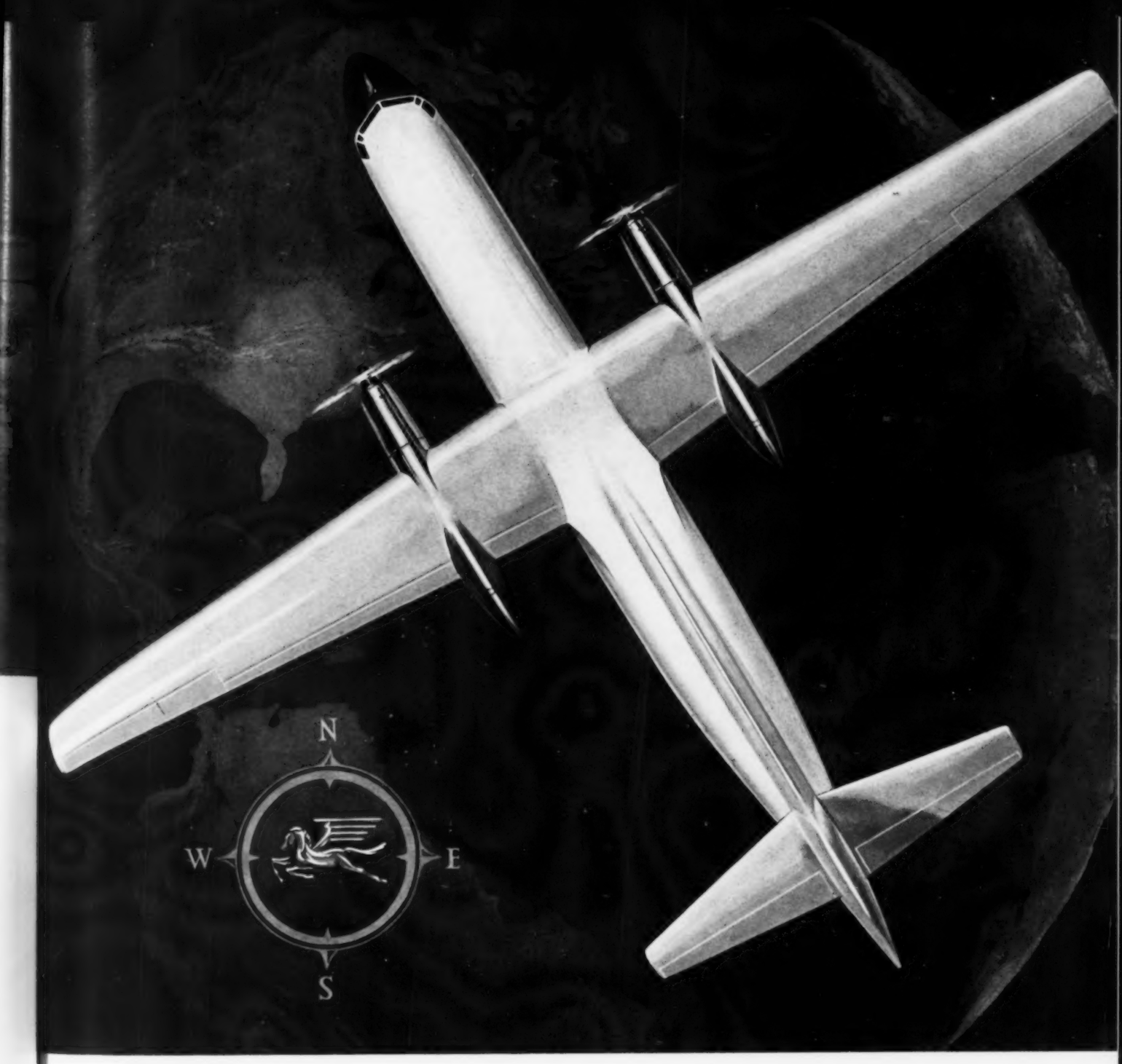
B & H makes the *JETCAL*® Analyzer and *TEMPCAL*® Tester

B & H INSTRUMENT CO., INC.

3479 West Vickery Blvd. • Fort Worth 7, Texas

Sales-Engineering Offices:

ALLEY STREAM, L. I.: 108 So. Franklin, LO 1-9220 • DAYTON, OHIO: 209 Commercial Bldg., MI 4563 • COMPTON, CAL.: 105 N. Bradfield St., NE 6-8970

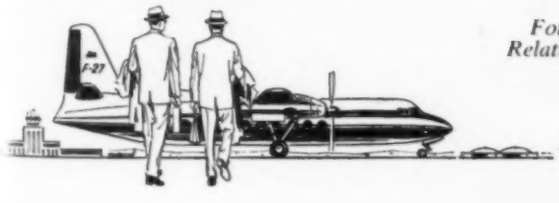


World-wide maintenance for the F-27

Corporations operating Fairchild F-27's as executive aircraft can be assured of maintenance the world over. With more and more customers purchasing F-27's throughout the Free World, overhaul and spares services will always be nearby. The F-27's Rolls-Royce Dart propjet engines are backed by a world-wide network of service facilities.

Many corporations have decided that the F-27 is the aircraft to modernize their fleets. Cruising at better than 300 mph over a 2100-mile range, the F-27 surrounds airborne executives with pressurized and air conditioned comfort. And no other aircraft of its type has the F-27's short-field capability.

FAIRCHILD
F-27



For full information write to: R. James Pfeiffer, Executive Director of Customer Relations, Fairchild Engine & Airplane Corporation, Hagerstown 15, Maryland.

THE FINEST AIRCRAFT FOR AIRLINES, CORPORATIONS AND MILITARY SERVICES

"Any way you look at it, Chuck... the safest engine is a clean engine... and there's no cleaner engine than a Gulf-lubricated engine!"

Use new Gulfpride Aviation Oil Series D, the detergent oil, or Gulf Aircraft Engine Oil, the straight mineral oil. Either way, you'll be keeping your engine clean, and making it safer.

Gulf oils lubricate engines thoroughly and efficiently and also keep engines clean.

That means increased periods between engine overhauls, because of less wear and tear on engine parts.

Gulf Aircraft Engine Oil is the finest straight mineral oil you can choose—keeps engines as clean as any straight mineral oil can. But for the greatest possible cleanliness, buy Gulfpride Aviation Oil Series D, the detergent oil.

Gulfpride Aviation Oil—Series D. Detergent oil—for greatest possible cleanliness in radial, inline and horizontally opposed engines.

Gulf Aircraft Engine Oil—Straight mineral oil that minimizes sludge and oil inlet screen deposits, keeping your engine clean and safe.

GULF
AVIATION PRODUCTS

...the world's finest aviation products

CYCLONE 9 powered SIKORSKY S-58s fly in world's largest ferrying operation

Offshore oil development moves at a rapid pace in the Gulf of Mexico, where Humble Oil & Refining Company operates the world's biggest helicopter ferrying operation. Last year, more than 85,000 passenger trips were made from Grande Isle, Louisiana just carrying employees to the fifteen Humble drilling rigs in the Gulf. Latest additions to Humble's fleet of helicopters are four giant Sikorsky S-58s, powered by specially adapted, advanced models of the Curtiss-Wright Cyclone 9 engine.

The trip from shore to rig used to take four or five hours in a lumbering workboat. Now it's a pleasant half-hour hop. And the same transformation — from time-consuming, drudgery surface travel to quick by-air connections — is the pattern wherever Cyclone 9-powered 'copters are put to work. In military service, in airport-to-city helicopter airlines, in rough-terrain rescue and supply work, in messenger and delivery service for industry, the modern helicopter has assumed its rightful stature and is steadily increasing in importance in today's transport picture.

WRIGHT AERONAUTICAL DIVISION
CURTISS-WRIGHT
CORPORATION • WOOD-RIDGE, N. J.

World's Finest Aircraft Engines

THE SCALES FAVOR THE . . .

SUPER VENTURA

WHY NOT COMPARE?

More than a score of the nation's leading industrial organizations have ordered or today have in operation the famous Super Ventura.

The Super Ventura offers you a 300 MPH executive suite plus living room luxury. Today's busy executive can avoid losing many valuable working days by using the Super Ventura.

For further information, write, wire or call Manufacturing Division, Howard Aero.

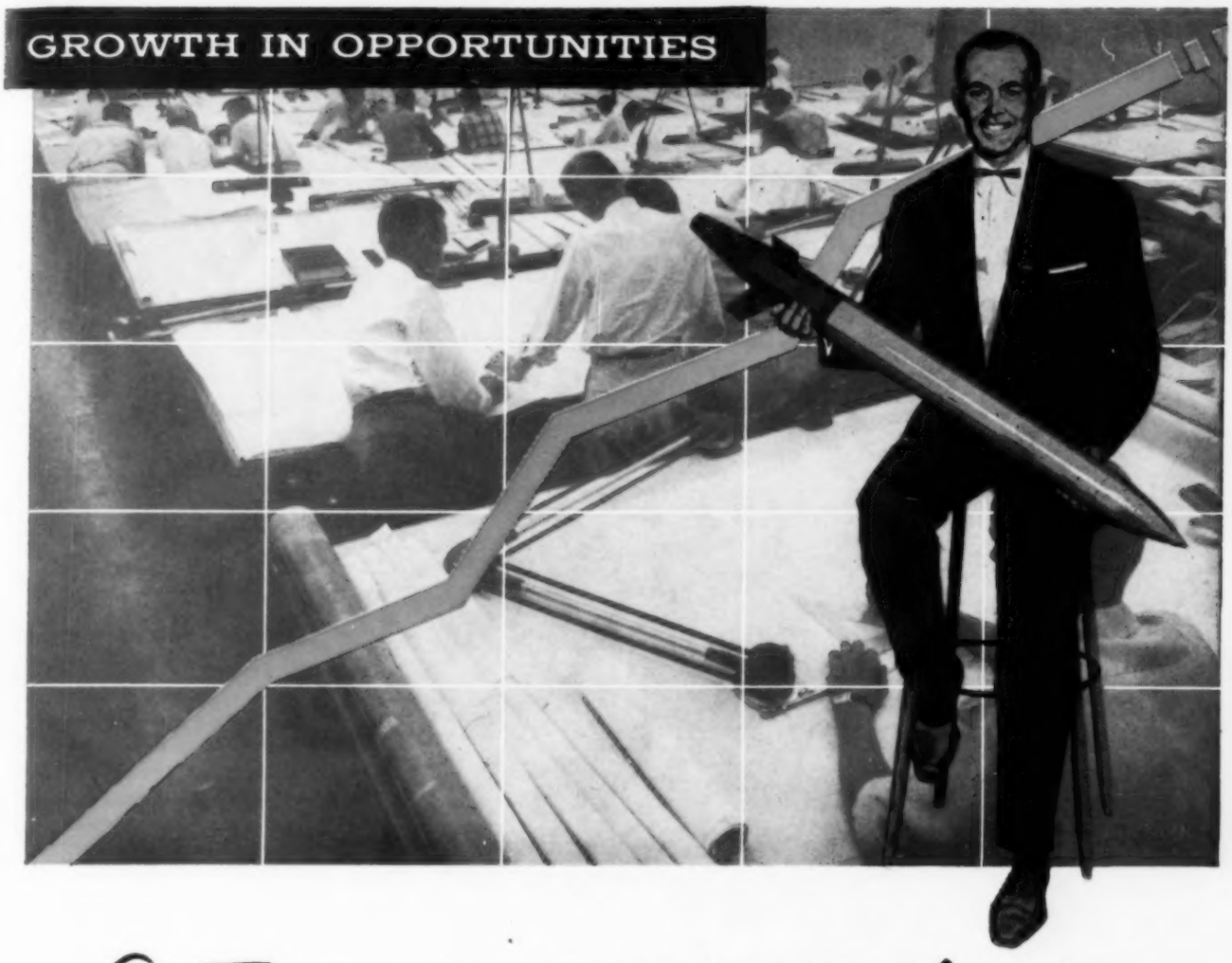
ACTUAL ELAPSED TIMES RECORDED ON RECENT SUPER VENTURA TRIPS

San Antonio-New Orleans	500 mi.	1:18	384mph AGS
Tulsa-Carlsbad	400 mi.	1:02	388mph AGS
San Antonio-Dayton	1,080 mi.	3:15	331mph AGS
Los Angeles-Akron	2,120 mi.	6:45	315mph AGS
San Antonio-Pittsburgh	1,280 mi.	3:50	333mph AGS
San Antonio-New York	1,590 mi.	4:50	329mph AGS
San Antonio-Daytona	1,050 mi.	3:05	340mph AGS
Denver-Houston	925 mi.	2:50	325mph AGS
San Antonio-Detroit	1,245 mi.	3:40	339mph AGS
Colorado Spgs.-New York	1,725 mi.	5:05	339mph AGS
San Antonio-Los Angeles	1,220 mi.	3:40	332mph AGS
Miami-New York	1,100 mi.	3:05	355mph AGS

Howard Aero INCORPORATED MANUFACTURING DIVISION

P. O. Box 8247 San Antonio, Texas

GROWTH IN OPPORTUNITIES



At Temco GROWTH tells the story

Growth — in engineering opportunities, for example, tells the Temco success story.

Even in the fast-moving aircraft industry, Temco's growth has been extraordinary. Its rise — from small manufacturer to designer and builder of its own aircraft — has been accelerated by constant discovery and development of new opportunities.

And engineering opportunities have multiplied with every step of this growth. In 11 years, the Temco Engineering Department has grown from a staff of 4 to more than 800. To its earlier production engineering skills, Temco has added such diversified operations as electronics, guidance systems, and its own jet aircraft, missiles and weapons systems.

TEMCO

AIRCRAFT CORPORATION, DALLAS

Month by month, new activities at Temco create new opportunities in research, design and development. The story of vigorous growth at Temco carries a special message to the experienced engineer: here is your opportunity to move ahead with a company that's going places fast!

Mr. Joe Russell, Engineering Personnel
Room 107-H, Temco Aircraft Corp., Dallas, Texas

Please send me complete details of the Temco story of unusual opportunities for experienced engineers. I am especially interested in_____

_____

NAME_____

ADDRESS_____

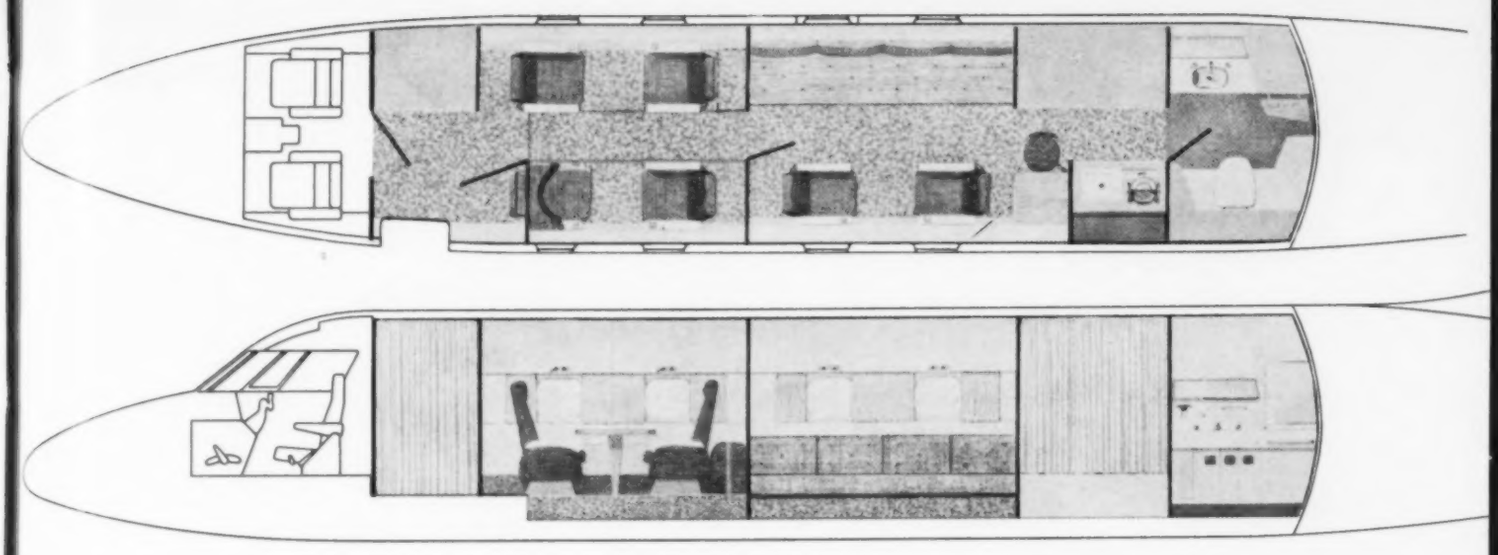
CITY_____ STATE_____

First flight views of the 500-mph. Lockheed Model 329 JetStar show its beautiful lines. Note swept wing and tail surfaces with rear-fuselage engine installation above wing. This moves engine noise behind cabin and intakes are protected from foreign objects on runways. Dimensions are 53 ft. 8 ins. for span, 58 ft. 10 ins. for length and 20 ft. 6 ins. for height, with cabin floor 4 ft. 6 ins. off the ground. Two Bristol Orpheus engines on prototype deliver about 10,000 lbs. of thrust for 28,000-lb. normal gross weight. —(Lockheed Photos.)

History In The Making

WHILE all kinds of modern high-speed business aircraft design proposals have been made in manufacturers' announced and rumored intentions, with promises ranging from 300 to 550 mph. for prop-jets and straight jets, remained for Lockheed Aircraft to become the first to construct a prototype and actually fly it. This is the new Model 329 utility transport for 10 passengers and 2 crewmen, pictured here in its first flight on September 4, 1957, from Edwards Air Force Base in California.

Whether the 329 ever becomes commercially available, and Lockheed says it won't until and after the military buys it, corporation pilots now flying business planes in the $300,000-$1,000,000 bracket and even those who can not yet afford such equip-



JetStar executive interior arrangement shows three pairs of seats, 4-place divan, galley and large toilet-lavatory compartment, with large baggage compartments fore and aft inside cabin. Door is at front. Seating is elevated above aisle floor. Charts below show speeds and Mach numbers to be similar to those of new jet airliners now being developed, with sea level standard air rate of climb of 3,000 fpm. and 45,000-ft. ceiling.
—(Lockheed Drawings and Sketches.)

ment are naturally looking to Lockheed for leadership. Only a few of them — about 22 in Super Venturas and 30-odd in B-26's — ever get anywhere close to 300 mph., the rest of several hundred in the upper crust of high performance business flying having to mill around at 220-260 mph. The Lockheed's 500-mph. cruise speed therefore offers at least to double the performance of most "wheels" in business flying, and this is much more of a performance gain than the big new jet transports offer the airlines, which is a gain in schedule speed of 40%.

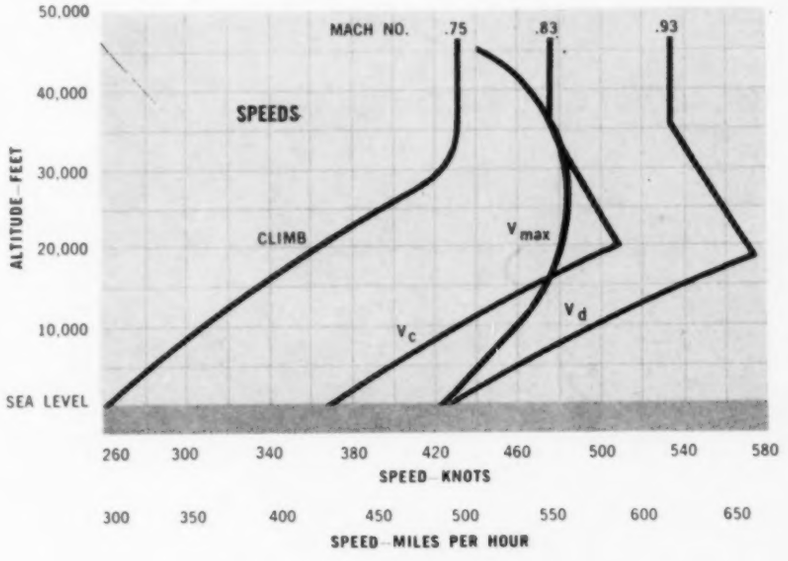
Those who really need a lot of transportation see the 329 as being capable of revolutionizing their aircraft utilization. Despite the big "if" involved in selling the military or forgetting all about it, the lure is strong and will remain so until somebody comes up with something like 400 mph. or better for sale. This may or may not be a long way off, but meanwhile the 329 is flying like a real jet should.

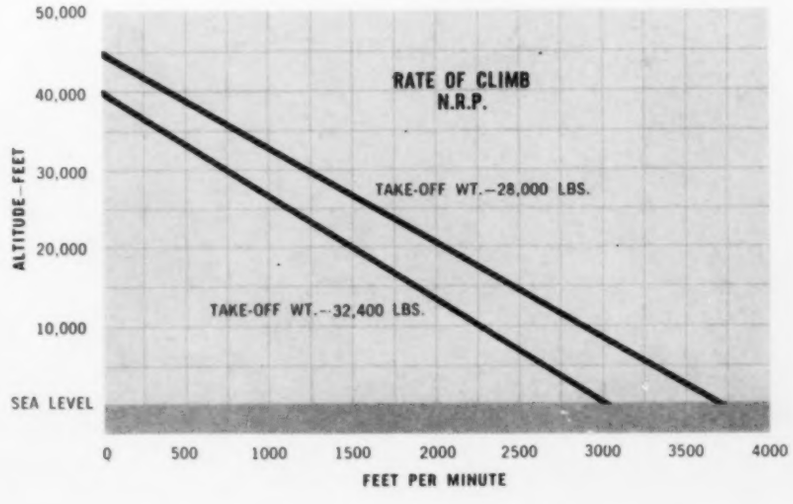
"It's fast — plenty fast — and it handles as responsively as a well-trained racehorse," says its first pilot, Roy J. Goudey, in a timely Lockheed quote. "We had to throttle back even on take-off and then again during the first flight to keep pace with our chase plane."

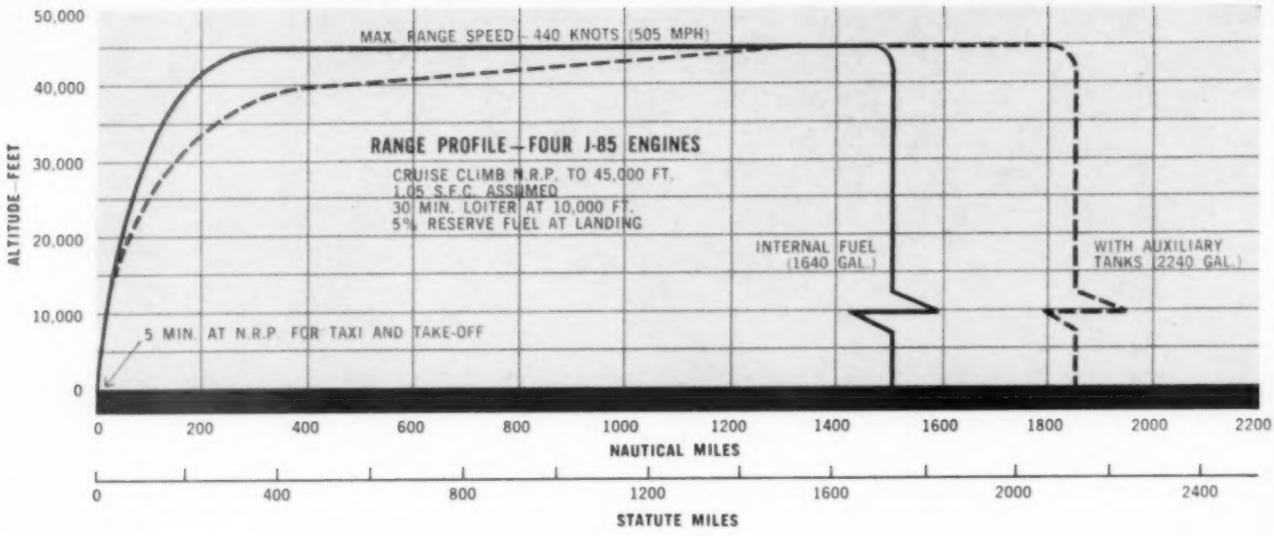
There's a good quote from Co-Pilot Robert Schumacher, too. "The cockpit and passenger compartment are so quiet that conversation can be reduced almost to whispers."

This is a history-making utility transport, whether Lockheed ever lets anybody buy it or not. It looks as good as its pilots say it handles and as good as the Lockheed brochure pictures it to be in design figures and charts.

According to the basic data, power will total about 10,000 lbs. of thrust, available either from a 2-engine or a

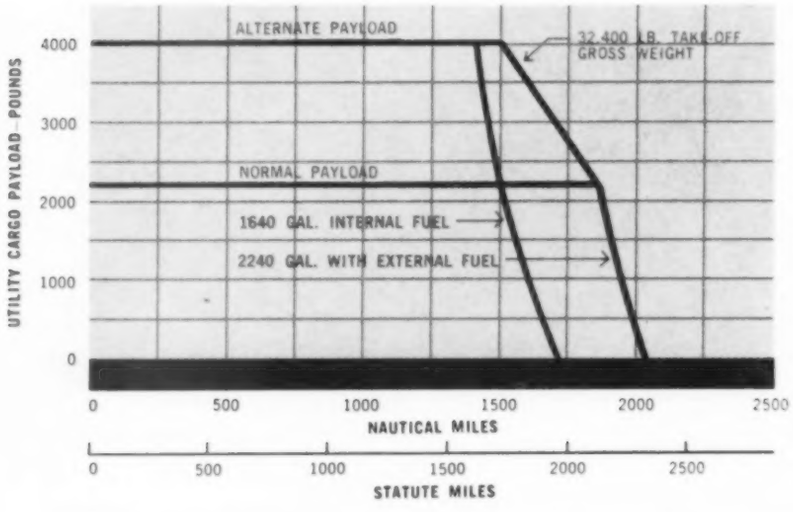


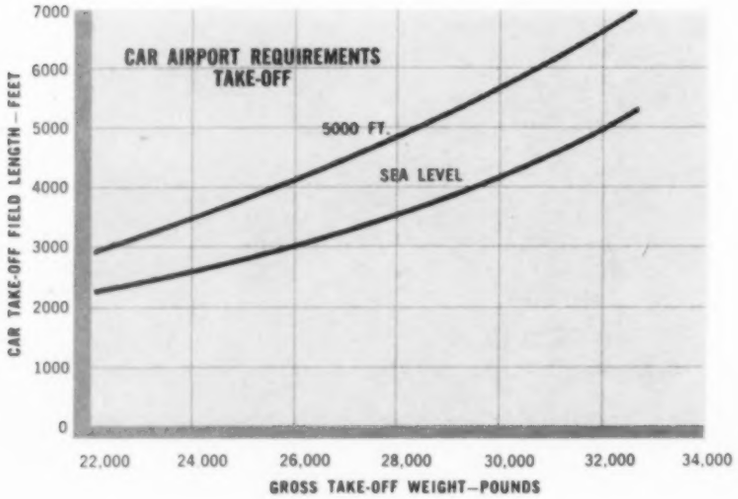




JetStar flight-planning possibilities are indicated in the range profile chart above, with payload calculations in the chart below and runway take-off length charted at bottom. For normal operations, 2,150-lb. payload is indicated for 1,730-st.-mile range which can be extended to 2,130 st. miles with slipper-tanks. Range profile chart is with four General Electric J-85 engines of 2,500 lbs. or more thrust each; 5-min. allowance for taxi and take-off, cruise climb at normal rated power to 45,000 ft., 505-mph. cruising speed, 30-min. loiter at 10,000 ft. and 5% reserve at landing. Take-off figures are based on CAR airport requirements to clear a 50-ft. obstacle or to stop with one engine failing at the critical point of the take-off run. They indicate a 5,000-ft. runway requirement for sea level standard air at a 32,000-lb. gross weight.

—(Lockheed Charts.)





4-engine configuration, the latter being with four of the new General Electric J-85 jets. These have not yet been declassified in detail although they are reported to be in the 2,500-lb. thrust class and are believed to have a thrust-to weight ratio exceeding that of any other known engine. The prototype is flying with Bristol Orpheus engines of about 5,000 lbs. thrust each. The total of 10,000 lbs. or more of thrust in either combination appears to be based on military ratings, which usually exceed commercial ratings.

Additional basic data from Lockheed:

Cruising speed, 500-550 mph.

Approach speed, 140 mph.

Stall speed, landing, 92 mph.

Sea level, standard air rate of climb, over 3,000 feet per minute.

Normal take-off weight, 28,000 lbs.

Maximum take-off weight, 32,400 lbs.

Landing weight, 21,000 lbs.

Empty weight, 14,670 lbs.

Wing loading, 53.5 to 61.9 lbs. per square foot for take-off and 40.2 lbs. per square foot for landing.

Thrust ratio to take-off weight at military power, 2.86.

Fuel capacity in wing, 1,640 gals.

Optional slipper-tank fuel capacity, 600 gals.

Total available fuel, 2,240 gals.

Total available fuel weight, 4,400 lbs.

Wing area, 523 sq. ft.

Span, 53 ft. 8 ins.

Aspect ratio, 5.5.

Wing sweepback, 34 degrees.

Length, 58 ft. 10 ins.

Height over tail, 20 ft. 6 ins.

Outside fuselage diameter, 85 ins.

Inside cabin width, 75 to 79 ins.

Aisle headroom, 74 ins.

Lockheed charts accompanying this article detail design performance.

It appears that the Model 329 was

(Continued on page 48)

Flight portrait of production-model 4-place, 180-hp. Piper Comanche shows its laminar-flow wing curve (note wing-tip), swept vertical fin and rudder and apparently-lengthy cabin. It has 1,075-lb. useful load at 2,550-lb. gross weight, cruises 160 mph. —(Piper Photo.)

Comanche Performance

THE new Piper Comanche a 4-place, all-metal, low-wing, has entered production following formal CAA certification during the summer, and Piper in October released final factory data on the 180-hp. model.

As the accompanying tabulation shows, the 180-hp. Comanche fits into the 160-170-mph. category. Target price is $13,500 for the standard version.

At a 2,550-lb. gross weight, it will have a useful load of 1,075 lbs., which indicates about 800 lbs. for people and baggage with 50 gals. of fuel for a range up to 920 miles. Optional fuel capacity of 60 gals. will extend this range to the 1,100-mile mark and it is probable that nearly all Comanches will carry the extra tank. These range figures are for a cruising speed of about 143 mph. at reduced power. At 75% power, with 160 mph. at 8,000 ft., the range will be 800 miles in 5 hrs. with 50-gal. supply and 960 miles in 6 hrs. with 60-gal. supply.

With its nose wheel for better handling qualities on the ground, the fast little Comanche will have 58-mph. stalling speed for landing with flaps and will be a short-field airplane with 750-ft. take-off run and 600-ft. landing roll at gross weight and at sea level in no wind. Rate of climb is 910 fpm. This is the first 4-place Piper of all-metal construction and with retractable landing gear.

The Comanche utilizes a laminar-flow wing and is distinguished by its swept rudder and single-piece "stabilator" of the flying-tail type used on high-performance jets.

The first 8 Comanches off the production line at Lock Haven will be retained by Piper for accelerated field service testing and demonstration purposes. The factory has avoided accepting customer orders or deposits until prospects have had a chance to see and fly the airplane. First deliveries to distributors are expected soon.

A high rate of production is anticipated for next year — as many as 5 Comanches a day, or about 100 per month, by late 1958.

1958 Piper PA-24-180 Comanche

Factory Data

Powered by a 4-cylinder Lycoming O-360 AIA engine, rated at 180 hp. at 2,700 rpm. for take-off and continuous operation.

Gross Weight, lbs.	**2,550**
Empty Weight, lbs.	**1,475**
Useful Load, lbs.	**1,075**
Fuel Capacity, gals.	**50**
Optional Fuel Capacity, gals.	**60**
Top Speed, mph.	**167**
Optimum Cruising Speed, 75% hp., 8,000 ft., mph.	**160**
Stall Speed, landing with flaps, mph.	**58**
Rate of Climb, fpm.	**910**
Best R/C Speed, mph.	**96**
Service Ceiling, ft.	**18,500**
Abs. Ceiling, ft.	**21,000**
Fuel Consumption, 75% hp., gph.	**10**
Range, mi., hrs., mph., hp., alt., gals.	**800-5-160-75%-8,000-50**
	960-6-160-75%-8,000-60
Optimum range, mi., hrs., gals.	**920-6.2-50; 1,100-7.5-60**
Take-off Run, ft.	**750**
Landing Roll, ft.	**600**
Wing Span, ft.	**36**
Length, ft.	**24.7**
Height, ft.	**7.3**
Wing Area, sq. ft.	**178**
Power Loading, lbs.-hp.	**14.2**
Wing Loading, lbs.-sq. ft.	**14.3**
Baggage Capacity, lbs.	**100**

NOTE: Performance is for gross weight at sea level unless noted.

Enlarged picture windows for cabin and enlarged side windows for cockpit identify this Executive Aircraft Service Lodestar conversion, which features new V panel on glare shield for all radio switches and location of all radio equipment and junction box between lowered front spar and rear spar. Photo at right shows one of two identical seat-high radio chests in cockpit, with lid open. Junction box lifts out to make equipment accessible. Note circuit breaker panel on outside front of cabinet within easy reach of pilot.
—(Executive Aircraft Service Photos.)

Lightweight Lodestar

BUSINESS aircraft modification and conversion centers continue to come up with significant improvements to make good airplanes better, the latest being an uncluttered Lockheed Lodestar by Executive Aircraft Service of Dallas offering advantages from the combination of seven new features involving (1) enlarged and more comfortable cockpit with elongated and sliding windows; (2) new radio control-switch V panel across the glare shield with windshield defrosting behind it; (3) new Janitrol heater installation and air scoop with new cockpit outlets; (4) lowered front spar for level cockpit floor and CG location of all radio equipment; (5) short-stack exhaust system with sleeve-type collector rings; (6) new location for anti-icing supply with increased quantity; and (7) new and larger cabin windows.

"Contrary to some recent trends, this is not a speed-kit conversion at all but features, instead, a practical solution to some of the pilot's problems concerning safety and comfort up front where the work is performed," says L. V. Emery of EAS, who has turned out well over a hundred Lodestar and DC-3 conversions.

What his newest Lodestar reflects is a thorough job of holding down weight so that workaday loads can be distributed safely and carried safely with good performance. Fully equipped with custom interior and a comprehensive transport radio and instrument installation, Emery has come up with an empty weight of only 13,650 lbs. to give the pilot a 5,850-lb. useful load for people, fuel, oil and baggage within a 19,500-lb. gross weight. The 11-place Lockheed has a 644-gal. fuel supply for its 1,350-hp. Wright R-1820-56 engines.

The most interesting modification concerns the cockpit and its provisions. By lowering the front spar, clearance was obtained for a level floor all the way back to the rear spar and bulkhead. This made clear space available for installation of all radio on the center of gravity and in a spacious chest-type enclosure, behind the copilot, which has adequate roominess for considerably more equipment than the large amount now carried. Opposite this chest is another one, behind the pilot, containing the complete electrical junction box lying flat, parallel with the floor rather than vertical. Both of these chests are only about seat high, off the floor, and unattached upholstered pads, or cushions,

Spaciousness of custom interior is exaggerated by enlarged windows and lack of unnecessary frills. Galley (top left) behind rear seat has two ice boxes, separate bottle and food storage, three large storage drawers and hot and cold bottles. Door behind toilet (right) is for large inside baggage storage and extra coat closet.
—(Executive Aircraft Service Photos.)

atop their lids provide roomy seat space for passengers visiting the cockpit. Their lids swing upward and to the sidewalls for easy accessibility to the equipment they conceal.

In addition to the increased space gained by the lowering of the front spar in the cockpit, a considerable weight reduction in electrical wiring was achieved, this because the location eliminated long connections to radio units ordinarily installed from necessity in the nose and in the aft cabin of a Lodestar. The shortened wiring saved about 200 lbs., the nose was left clear for future radar installation and the aft fuselage was utilized for greater and much-needed closet and storage space behind a roomy and spacious toilet compartment.

The airplane's complement of radio gear includes dual Bendix MN85F VOR receivers, dual Bendix MN97 H3 Omni Mag indicators, Bendix MN72G RMI, Bendix TA20A VHF transmitter, Bendix RA18C1 VHF receiver, Bendix DFA-70F lightweight ADF receiver with LPA-70 flush loop, Bendix MN100A lightweight glide slope receiver, Bendix lightweight MCA-7A marker receiver, Narco 1016 auxiliary VHF transceiver, Collins 346A1 audio isolation system and Sperry C4A Gyrosyn compass. The new lightweight units saved another 75 lbs.

A new V panel for radio controls serves as an extended glare shield and incorporates behind it a windshield defrosting system. This moves all radio switching down from the ceiling to the top of the instrument panel, where it is more convenient, and frees most of the overhead panel for utilization of future added equipment.

A new installation of a 100,000-BTU S100 Janitrol combustion heater was made between the No. 1 and No. 2 baggage compartments and it has a new and almost-flush air intake on the starboard underside of the nose. Much-improved cockpit air outlets are provided, one on each side at the bottom of the instrument panel, for cool air, heated air or mixed air in large volume.

A new and larger 19-gal. anti-icing supply for windshield, props and carburetors is located behind the No. 4 baggage compartment, with outside filler neck. The airplane's empty weight, incidentally, includes full anti-icing supply of alcohol.

In addition to the one-piece windshield, the cockpit features newly-enlarged and sliding side windows for improved visibility rearward. They are 48 inches long and 15 inches deep.

Three-way EAS chairs are provided for pilot and co-pilot. These are on tracks for fore and aft movement, are adjustable up and down, and can

(Continued on page 48)

These two photos show short stack and sleeve-type collector ring installation and new Janitrol heater intake beneath nose, almost flush, with picture on right showing 48-in. length of new cockpit sliding windows. Spar installation of all radio equipment leaves nose completely clear for future radar equipment. Taxi lights are in landing gear struts.
—(Executive Aircraft Service Photos.)

Perfect weather drew an attendance of 376 participants and 54 planes for the first Airwork Operations Symposium last month at Millville Airport in New Jersey, home of the Airwork engine overhaul base shown above.
—(Airwork Photo.)

The Airwork Operations Symposium

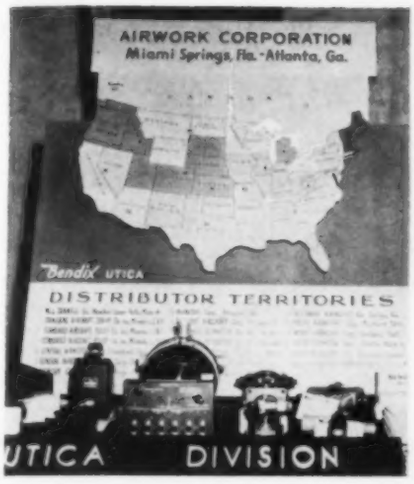
Two-day get-together highlights engine, accessory and traffic problems

By GEORGE E. HADDAWAY

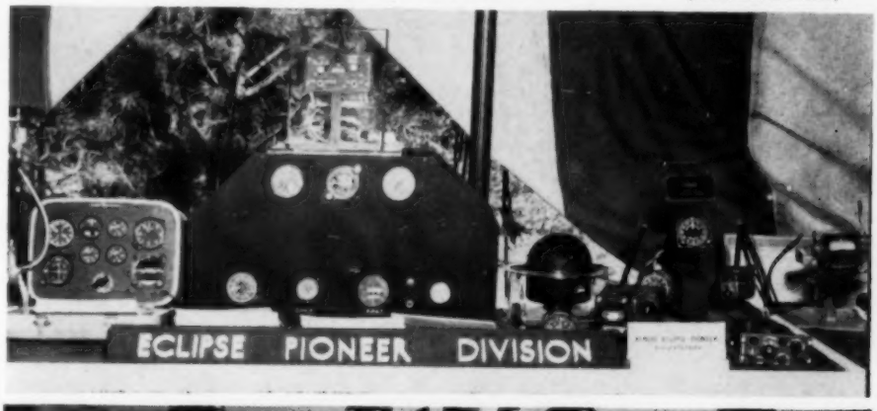
THE Airwork Corporation of Millville, New Jersey, with branches in Newark, Washington, Cleveland, Atlanta and Miami, has built an enviable reputation as one of the finest engine overhaul outfits in the nation. Airwork also is one of the largest distribution houses in the country and soon will boast a fine dealer network throughout the East. A spanking new instrument overhaul shop will be added by the first of the year. It is logical that such a dynamic enterprise should host one of the most productive aircraft user conferences held in recent years.

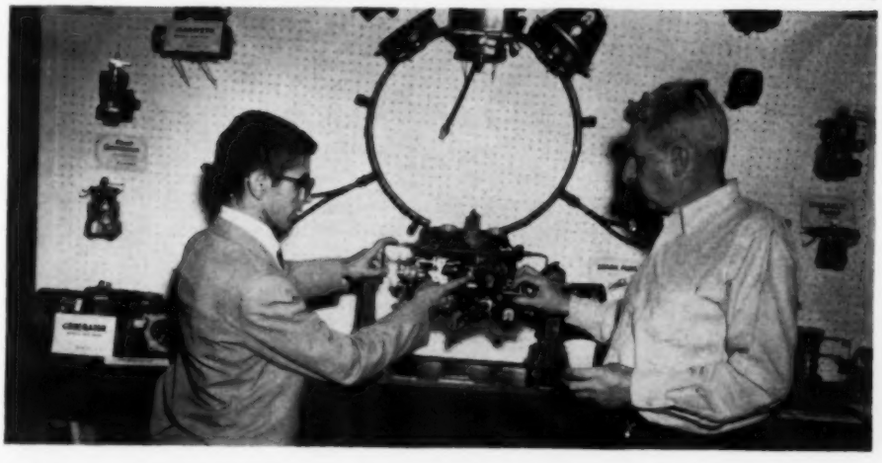
Flying down to Millville from Linden, New Jersey, in a Cessna 182 belonging to one of the few totally

Operations discussions were conducted in forums, the opening session being shown here with F. L. Hine, president of Airwork, presiding. Continental Motors and Lycoming held the spotlight at this session.



Registration (above) drew pilots and aircraft owners and experts from 25 manufacturers who distribute through Airwork. Bendix-Utica display (left) featured newest de-icer equipment, with Sales Engineer Dick Padgett in charge. Bendix-Pioneer exhibit (below) showed navigation systems with Sales Manager Ted Carpenter demonstrating Continental compass system and course line computer. In bottom photo, G. Vraila of Airwork (left) shows cutaway of Stromberg carburetor at display of samples from 328 different accessory types overhauled by Airwork. —(Airwork Photos.)





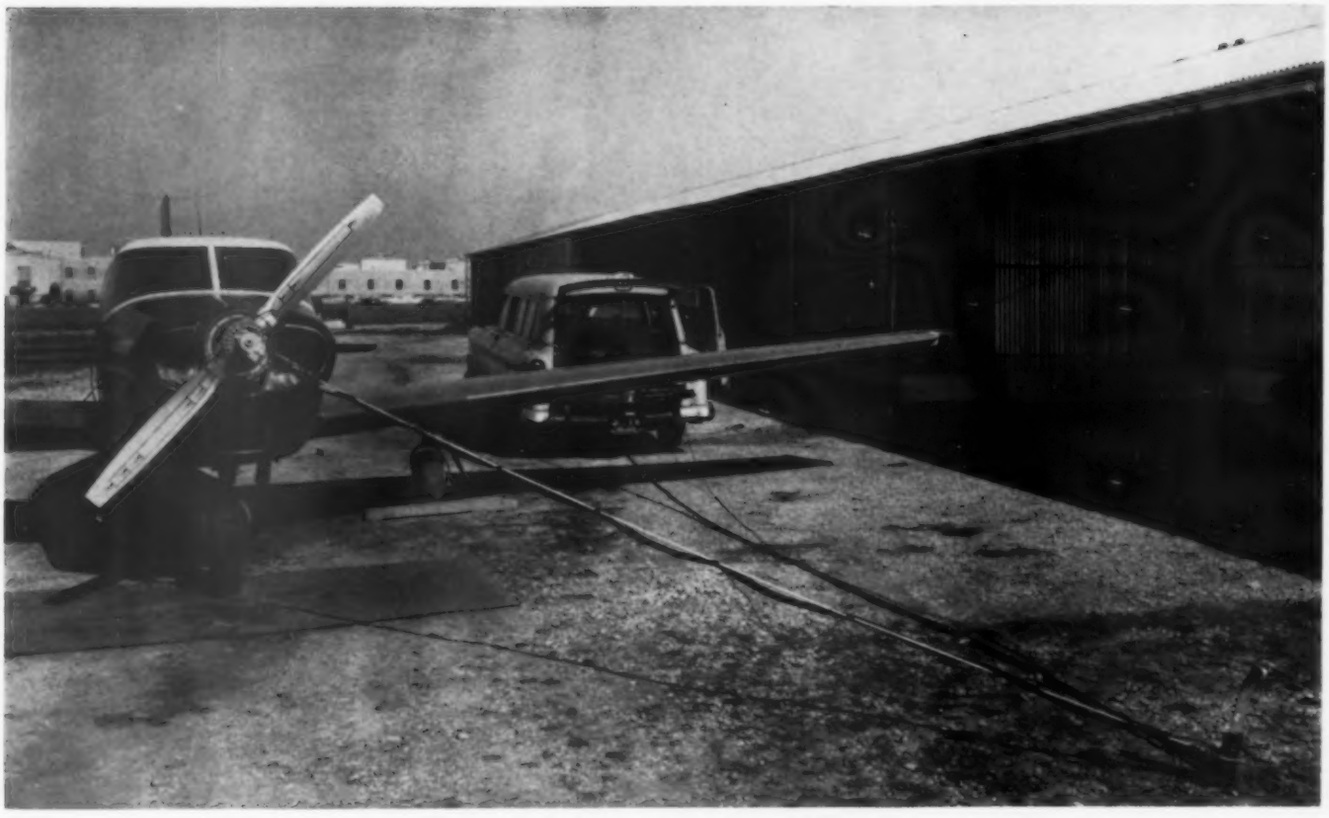
dedicated writers in this business, Mr. Leighton Collins of *Air Facts*, we discussed some of the ingredients that have gone into the pot in recent years to make the airplane a dependable utilitarian machine and how our present aviation progress would have been next to impossible without the contributions of our great service institutions whose tremendous investment in facilities is now paying off, both to themselves and to the users. This fact was notably borne out by the tremendous attendance at the two-day Airwork Symposium at Millville on September 19-20, which totalled around 400 people. The great majority of them were pilots and aircraft owners seeking the answers to many of their operating problems and visiting with representatives of 25 manufacturers of aviation accessories and related equipment. Their wares were displayed in a 100-foot by 40-foot tent adjoining the Airwork meeting hall on the airport. Like the Reading Aviation Service annual awards meeting each June in Reading, Pennsylvania, the Airwork symposium attracted more customers than the trade associations usually attract to their annual meetings. Perhaps the main reason for such splendid attendance is the absence of frills, dull banquets and long-winded speeches in some huge hotel where half the registered visitors are in the cocktail lounges. The Reading and Airwork affairs are held right on the airport.

Francis L. Hine, Airwork president, referred to his symposium as being very much like a refresher course at college. On the morning of the first day Continental Motors ran the show in the meeting hall for all those interested in Continental equipment. In the afternoon the Lycoming people took over for their users after an interesting session on Bendix PS Series carburetors. On the morning of the second day they dished up a spirited discussion of the air traffic situation and the Curtis Report, which could have gone on forever with plenty of spark but no definite conclusions, there being no quick solution to this one. This session was followed by a fascinating explanation of new black box navigational instrumentation being developed by the Eclipse-Pioneer Division of Bendix, which includes their Course Line Computer, Flight Director System, Continental Compass System and Polar Path Compass System. The problem of bogus parts was discussed by Joe Chase of the Flight Safety Foundation.

The 8th Annual Pratt & Whitney Forum consumed the final afternoon session and capped the climax to an altogether productive and down-to-earth business aircraft operations forum.

We have complained for years that there are too many aviation meetings — mediocre ones, window-dressing fiascos and promotions. The formula developed this year at Airwork apparently is the kind of thing busy people will attend. It might well be studied by others and applied either in whole or in part in other sections of the country.

★ ★ ★



McCauley test set-up for new prop shows cable leading from hub around ground anchor and back into instrumented station wagon. Technicians take exhaustive readings while propeller is operated throughout its speed range. Comanche has 180-hp. Lycoming engine. Close-up on opposite page shows how prop installation is instrumented.
—(McCauley Photo.)

Propeller Development for the Piper Comanche

By WALT VOISARD
Chief Engineer, McCauley Industrial Corp.

WHAT is done to make a plane safe for today's modern pilot? Have you ever asked this question? We have selected the propeller to tell some of the story of what a manufacturer does to assure safe, dependable flight. The propeller converts the engine's power to flight performance and thereby enables the plane to take off, climb and cruise with ease and smooth operation. Although a seemingly uncomplicated product, much development, design and preliminary testing goes on before a propeller is suitable and can be approved by CAA for use.

Recently the new 4-place, 180-hp. Piper Comanche was announced. McCauley Industrial Corporation, manufacturer of forged aluminum propellers for personal and business aircraft, was called upon to develop an approved constant-speed propeller for the Comanche.

It was necessary that McCauley's constant-speed propeller be redesigned to provide a lightweight, inexpensive unit tailored to the Comanche's aircraft performance requirement. New blades to aerodynamically match the engine-aircraft requirements were used. A design change was made in the functional and non-structural components to take full advantage of new factory equipment and production techniques. As always, emphasis in design was placed on all details affecting safety. Special emphasis was placed on structural and vibration characteristics, as well as maintaining and improving features which provide for a long, trouble-free, and smooth operation.

The basic structural retention design and components used in previous McCauley propellers, which have enjoyed thousands of hours of extensive operation, were maintained. The new functional components for McCauley's Comanche propeller provide a simplicity of design which results in fewer, lighter, and more economical, interchangeable parts. These provide easy assembly and disassembly, either in part or in whole. This is a factor in low maintenance cost.

A number of different blade designs were investigated from the structural standpoint to pinpoint the most optimum characteristics for vibration considerations — the heart of safe operation requirements.

The blade must be designed and tested thoroughly for this vibration requirement. The physical blade shape must have no critical natural (resonant) response in either the actual or probable operation.

The blades were examined carefully for the shape and occurrence of the third symmetrical mode, which may be excited by the higher engine orders. This condition, if not properly isolated, may result in high blade tip stresses. This can eventually result in serious service problems.

Current blade designs, with a physical shape similar to that required to match the requirements of the aircraft-engine combination, and on which experimental vibratory characteristic data had already been accumulated on a number of installation configurations were used as a base. Using

Close-up at right shows new propeller on Comanche with strain gages along blade front and slip-ring assembly on propeller hub. Strain gages are wires whose known resistance change as they stretch or compress, thus measuring stresses in operation. Operator in station wagon at bottom studies stress patterns on oscillograph screen.

such blades, a preliminary, but complete vibration survey, was made so that results could be compared and analyzed with engine crankshaft torsional data, and other data available on the new installation.

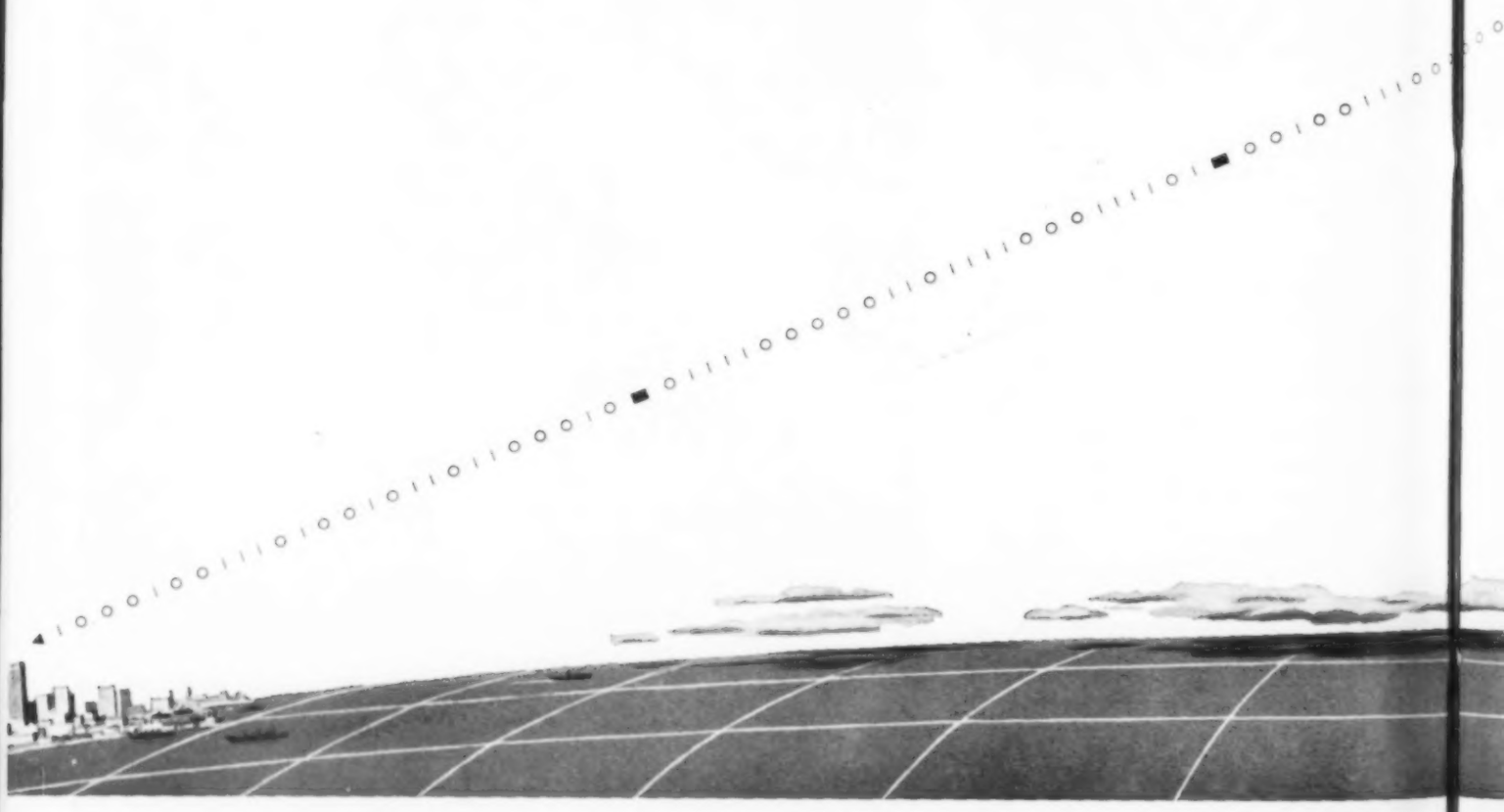
The old blade designs, with theoretical design computations and practical experimental test data accumulation, made it possible to produce additional blade designs. These, then, were used to successfully pinpoint that shape which would prove to be optimum for the installation. Two additional vibration surveys followed, both to determine and substantiate vibratory stress levels.

The results of the total of four surveys run indicated a final blade shape which proved optimum for the entire probable engine operating range.

"Vibration survey" is the rather loose term which is used to describe the gymnastics performed whereby bundles of wires and cans full of electronic tubes are employed with extreme patience, great care and hard work to produce a volume of curves which adequately and accurately define the propeller vibratory characteristics and stress levels. Strain gages are cemented to the blade in sufficient number and location to pinpoint any known or unknown areas. Gages are also applied to the crankshaft so that blade data can be compared with crankshaft output. This enables the computers to see "how hard the fist is striking the jaw," and "how good a

(Continued on page 48)

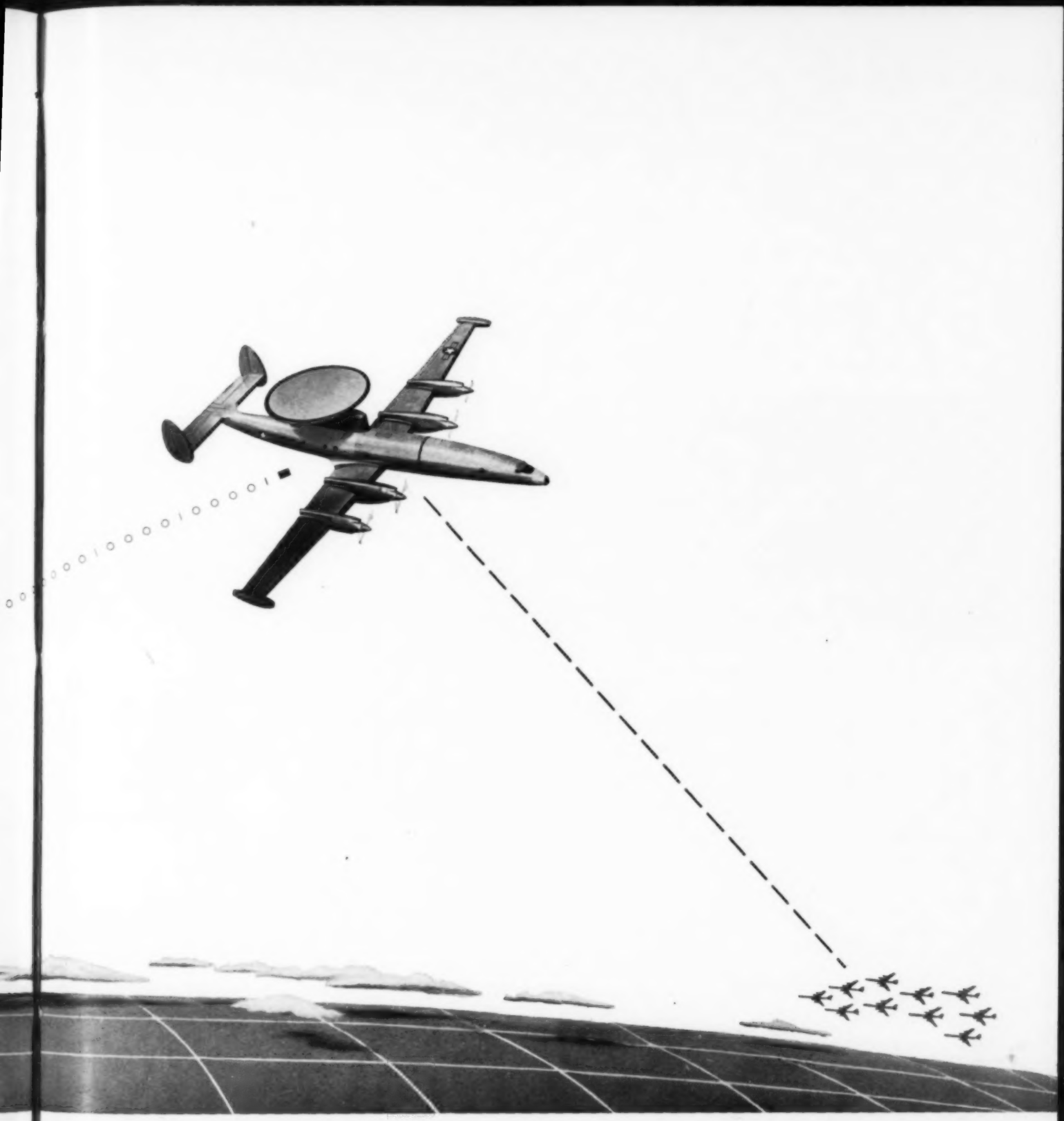
—(McCauley Photos.)



Time... the vital dimension

Ability of the United States to defend itself against attack, and to retaliate against an aggressor, are both vitally dependent on *time*. Every hour, every minute, every second of advance warning time is precious.

Our vast Continental Air Defense system, our powerful Strategic Air Command, our mighty fleets, and world-wide retaliatory striking forces all depend on

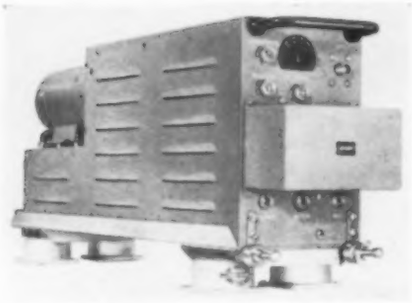


Airborne Early Warning (AEW) aircraft to alert them—the moment suspicious planes or ships are sighted approaching our far-flung defense barriers.

Able to "see" 150 miles (in all directions) through dense fog or total darkness, AEW patrol planes have a role so crucial that without them our nation's defense capabilities would be seriously handicapped.

America's safety depends on maintaining our Airborne Early Warning patrols at optimum efficiency and strength

LOCKHEED *means leadership* CALIFORNIA DIVISION, *Lockheed Aircraft Corporation, Burbank, California*



Dare DTR-360A transceiver (above). Bonanza below has 90 lbs. of Dare equipment, including installations and antennas. In it are transceiver, 2 transmitters, 2 receivers, glide slope and marker beacon receivers, plus all indicators and controls in duplicate.

Dare glide slope-marker beacon package.

Newest From Dare

DTR-360-A—VHF communications transceiver; meets or exceeds CAA TSO C37 and C38 requirements; 15-watt transmitter output; ½ ATR size; 23 lbs. including dynamotor power supply; 14-28 volt; 118.0-135.95 mc; 360-channel operation with 50 kc spacing or 180-channel with 100 kc spacing; choice of controls for single-channel simplex, double-channel simplex or any cross-channel duplex.

DGS-20—Twenty-channel glide slope receiver; meets or exceeds CAA TSO C34 requirements; ¼ short ATR size; 7.8 lbs. including transistor power supply; 14-28 volt; 329.3-335.0 mc.

DM-3—Transistorized marker beacon receiver with 3-light indicator; meets or exceeds CAA TSO C35 requirements; transistorized power supply; ¼ short ATR size; 5.9 lbs.; 14-28 volt; transistor switching.

Smaller But Better Radio

By TOM ASHLEY

MAKE 'em lighter and smaller, with best possible reliability — this is the exacting demand aircraft radio equipment manufacturers are working to meet. "Cheaper" is not included in the specifications of most business aircraft owners, for anybody who has sweated out the use and maintenance of Mickey Mouse radio gear would rather quit trying to get anywhere in an airplane than go back to it. No matter how excellent the airplane, it isn't very useful without quality radio that works. But those who can pay for quality can not always find the space or weight allowance for approved transport-type radio, hence the hue and cry to make it lighter and smaller — and the earnest efforts by leading manufacturers to answer this demand with miniaturization plus quality.

One of the most interesting efforts in this industry-wide research and development drive is being made by a relatively youthful and energetic small manufacturing firm, Dayton Aviation Radio & Equipment Corporation, known familiarly as "Dare" and located at Troy, Ohio, near the Dayton airport at Vandalia, where Dare has a factory sales and service operation.

Not a giant in the mushrooming electronics industry, Dare resembles a compact, highly-skilled custom aircraft radio shop whose experts have branched out into development and manufacturing. That's just about what the firm really is, except that its manufacturing scale has reached assembly-line proportions and its sales and service have been expanded on a national and even international scope, with 70-odd franchised and well-equipped distributors here and abroad who back up their sales with factory-approved servicing and stocks of equipment and parts.

Nobody in the field knew much about Dare until 1954, when its widely-marketed and highly accurate lightplane "Micro-Tuner" VHF receiver, with slip-proof worm-gear mechanism, won the respect of the industry as well as pilots. Leading custom radio shops, wrestling with problems of equipping multi-engine executive planes with reliable auxiliary or standby equipment, recognized the fine hand of craftsmanship which went into this little gem and took it on. Dare's volume of business doubled that year, reaching the half-million-dollar mark for the first time.

Since then, Dare has plowed back everything it earned and could borrow into several other developments for the business plane market, the major effort having since produced a remarkable 360-channel VHF transceiver with minimum of 15-watt transmitter output, its weight scaled down to only 23 pounds and its dimensions fitting a one-half ATR rack including dynamotor. For 14 or 28-volt systems, this equipment was built to latest CAA technical service order specifications as quality gear. Priced under $3,000, it has proved to meet the needs of operators of transports as well as light business planes and is now being manufactured at a rate of 10 units per week to meet the demand.

Dare has developed and is producing numerous aircraft radio products for VHF communications and navigation, but the firm's capabilities are best indicated by its recent acquisition of TSO numbers for its DTR-360A 360-channel VHF transceiver, DGS-20 20-channel glide slope receiver, DM-3 3-light audio-visual marker beacon receiver and its DBA-ICP VHF antenna, which was TSO'ed with the

Environmental test chamber below subjects Dare equipment to altitude, temperature and humidity conditions. Each Dare set is given hours of heat and cold treatments in oven (center) and deepfreeze (right).

360A as an integral system.

These units, all of which are being shipped to distributors and are being installed now, are the first in a complete line of TSO equipment Dare is perfecting. They mark the interesting emergence of an ambitious small firm into the big-time, as an eager competitor for the quality aircraft radio market.

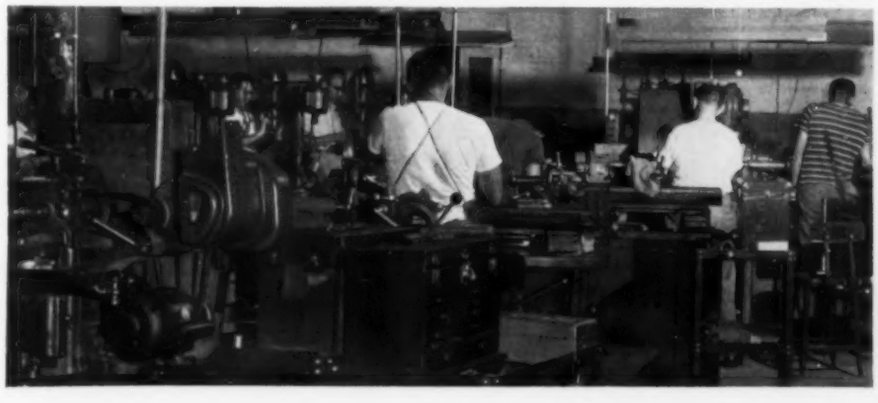
Success with good equipment has ballooned Dare's 1954 volume of $500,000 worth of business up to the $2,000,000 mark for 1957. This is not easy to do by a small company which has had to pull itself up by its own bootstraps and earn its way. It has been an achievement by a few dedicated experts working 12 and 14-hour days including weekends since 1951, when the enterprise modestly went into manufacturing after establishing itself as a custom radio sales and service shop at the Vandalia airport.

A young ex-customer service manager for Lear started the business as a shop. He is Lou Pitinsky, only 39 today. His cousin, Al Sherwat, joined in to supply business management experience. Their salesman is a pilot, personable Elliott Polansky, ex-airline pilot who used to be Bill Lear's pilot when the latter had a Bennett Bimotor. Polansky had never sold anything, except himself, and he knew nothing about aircraft radio except how to use it. But he has put over, in 1956-57, one of the biggest one-man radio selling jobs in the aircraft field. His elaborately-equipped Bonanza can be seen at leading airports all over the country, for he logs a minimum of about 70 hours a month in the field.

A visit to the Dare factory in Troy, Ohio, was revealing to us. Its engineering and test departments are just about as large and as busy as its production department with its efficiently staffed and operated assembly lines. Here, in miniature, is a complete, elaborately-equipped modern radio and electronics complex — just as impressive in its details as the many-times-larger facilities of the industry's behemoths. From the back-door raw materials receiving and stock departments, up through the busy machine shop and through the production lines and testing areas to the engineering department, the impression is not one of mass-production but is rather a picture of a team of specialists at work in a well-oriented engineering model shop.

Facilities for product testing seem to be limitless, in every department from engineering on down. Many of the specialized devices were developed and built for Dare's own precise needs. One expert told us, for example, that he believed his equipment could test

Part of a Dare assembly line (above) and a corner of the Dare machine shop (below) are pictured in the plant at Troy, Ohio. In addition to producing its own products, Dare also develops precision electronic equipment for the military and others.



Complete test and measuring equipment, some of it created by the firm for its own special needs, is used throughout the Dare factory. Part of the engineering design department is shown at top left, while photos at left and above show screen-room checking given to each Dare set.

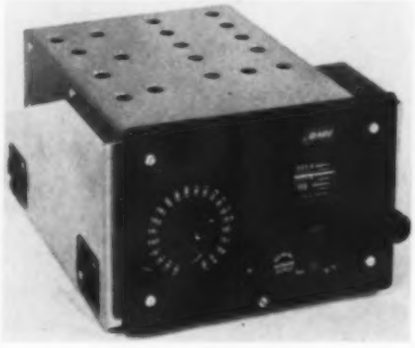
antennas more accurately than any gear available elsewhere in the industry.

Thorough testing is given to all incoming transitors and tubes. The tubes also receive a run-in to stabilize them before they are used in the assembly-line build-up of each radio set. Quality control in the production process is by inspection at the end of each assembly table, this eliminating potential trouble in small components before they are fabricated into an assembly.

Each Dare set, rather than an occasional sampling, has to survive 10 hours of alternate cold chamber, oven-baking and shake-table vibration. Final checking in elaborately-equipped screen rooms verifies precision performance before shipping. All of this emphasis on testing and checking serves a practical purpose as well as assuring the ultimate operator of the equipment of good performance. "We can't risk shipping out a piece of untested equipment because any faulty equipment would come right straight back to the factory," commented Al Sherwat. "Our equipment features precise accuracy and reliability." Each Dare radio has at least seven hours of operation by the time it is shipped and the experts say that possible failures usually develop within the first four or five hours of operation.

Lou Pitinsky, president, operates his office several miles away from the factory in the company's sales and service shop at the Vandalia airport — his workaday interests are centered around making certain that Dare products are giving satisfactory service. All of his line is designed on the building-block principal to cover a wide variety of VHF communications and navigation purposes. Lou's office is where field reports are directed, as well as incoming equipment needing servicing. The company is pledged to same-day service as far as practical, and a quantity of loaner equipment is maintained so that it can be air-shipped to keep distant users in the air. This type of servicing pays off not only in keeping the customer flying and satisfied but also by providing the factory an opportunity to analyze trouble spots and correct them in current manufacture and design. The company is small enough so that changes for improvements can be made in production without excessive loss of time and output.

Transmitter and tunable receiver are part of the Dare Micro-Tuner omni system (below), shown in glove compartment mounting. Building-block components include 10- or 22-channel transmitter, tunable receiver, omni converter, power supply. Direct or remote control available, with numerous accessories.



Service was Dare's business before it went into manufacturing and it has been retained as the cornerstone of the enterprise. "We learned what was needed when we did nothing but service other equipment," says Lou. "Our designing has been devoted to providing equipment built for servicing." Radio men all over the country recognize this when they open up Dare equipment and find its components not only well constructed but readily accessible for maintenance or easy removal and replacement.

There are not as many deep, dark secrets about aircraft radio communications and navigation equipment these days, as formerly, Dare experts say. The formula for success is to learn what the customer wants and produce it efficiently under strict quality controls so that it meets the required technical standards for dependable performance. Dare's growth confirms its formula as a successful one and its new products, aimed at steadily increasing standards and requirements, prove that it has the research and development resources for significant future expansion in sales and service. ★ ★ ★

Fisher discusses with Donald W. Nyrop, NWA President, and Frank Judd, Vice President – Operations & Engineering, (L/R), their new DC-7C fleet, which uses Champions in world climatic extremes of 100° above to 20° below.

Another in a series on the care taken by leading airlines to maintain top flight efficiency—and why this care has led them to select **CHAMPION SPARK PLUGS.**

Noted aviation authority reports on

NORTHWEST Orient AIRLINES...

Airmanship along the Northwest Passage

Once there was just air. Man came. He built a ship, conquered air. Air . . . man . . . ship. Cast in the master mold of Northwest Orient Airlines experience, this triumvirate of basic, vital elements became *Airmanship.*

How does Northwest define the new element it fired to perfection in the fusion of these three basics?

Airmanship is the knowledge and skill in all things pertaining to the operation, maintenance, management and safety of air transportation and the achievement of the highest standards of public service.

Northwest has it. Northwest pioneered it, built a long-dreamed Northwest Passage with it—a passage to the Far East with a luxury and safety the men who sailed the St. Lawrence never envisioned possible in their wildest moments.

With these thoughts, I watched Northwest Airlines' president, Donald W. Nyrop, trace NWA's routes on his office map . . . from the concrete canyons of New York City over the Great Lakes and plains, across the piney pattern of Canada and tundras of Alaska, over the Pacific and into the far land of

by HERB FISHER
international aviation authority, veteran test pilot, author

Artist's drawing of new $18,000,000 NWA Main Office & Overhaul Base at Wold-Chamberlain Field, Minneapolis-St. Paul.

pagodas, lotus ponds and Buddhist shrines. Here is a new Northwest Passage carved from the skies by 31 years of superior NWA Airmanship over land and sea.

Two rented open-cockpit mail planes, three 3-passenger cabin monoplanes and a handful of dedicated employees triggered fusionable elements of NWA Airmanship in 1926.

NWA began exploring its Northwest Passage in 1933 by flying the first commercial plane over the Northern Rockies and into the Pacific Northwest. This Airmanship feat—previously termed next to impossible because of the vast terrain, tricky heights and blizzards—took six days. NWA trail blazers rammed their "tin goose" through furious snowstorms and hair-raising downdrafts, once dropping 1,800 feet down the backside of a peak near Stampede Pass. Lacking radio and weather reports in those days, they flew visually, inching through unknown mountain passes and skirting peaks, often at treetop level. They fought severe icing conditions and bucked runway snowdrifts. Attaining Seattle, they were soon awarded the *first northern transcontinental route* between Chicago and the West Coast.

In like spirit, NWA pushed on to Alaska . . . became the first airline to link Hawaii with the Pacific Northwest . . . then spanned half the globe in 1947 to terminate its Northwest Passage in the Orient. NWA pioneered the Great Circle route to Japan, Korea, Okinawa, Formosa, Hong Kong and Manila—and has just been cited by the National Safety Council for a perfect safety record: "For splendid achievement in maintaining Orient service for 10 years without a passenger fatality in scheduled airline operations."

During this decade, Northwest planes flew more than 68 million miles to and from Hawaii, Alaska and the Orient . . . crossed the Pacific to and from Japan 4,600 times on regularly scheduled flights . . . logged 1,380,600,000 passenger-miles.

New turbo-compound DC-7C's featuring "Imperial Service," a new concept in luxury, are now going into service on all Northwest's daily Orient runs.

With nuclear impact in the aviation industry then, NWA Airmanship mushroomed to its present stature—71 ultra-modern air transports flying 31,000,000 plane-miles and more than a billion passenger-miles annually . . . 5,651 skilled employees . . . a $30 million annual payroll . . . 20,000 route-miles serving 28 domestic cities plus stations abroad . . . a $76 million annual operating revenue . . . and more than a million and a half satisfied passengers.

Service reliability became a vital requisite for maintaining superior Airmanship. It is reflected today in Northwest's on-schedule precision, aircraft dependability, pilot efficiency, passenger comfort and safety. To assure both service and safety, Northwest operates only the finest in aircraft, the very latest in high-quality parts and equipment. Radar, for example, is one of many navigational devices contributing to NWA's optimum performance.

The pencil beam of Northwest's dual-scope X-band radar paints a sharp, clear picture of weather up to 150 miles ahead. It forewarns minute by minute, day or night, of turbulence, pointing the way to smooth, fast, safe flight.

Backbone of efficiency and reliability in NWA airline operations is maintenance, both line and overhaul. NWA operates maintenance facilities in Hong Kong, Manila, Tokyo, Seattle, Minneapolis, Chicago and New York to assure peak flight efficiency for its fleet of DC-7C's, Stratocruisers, DC-6B's, DC-4's and DC-3's.

When I visited the Northwest Overhaul Base at Holman Field in St. Paul, I saw 1,200 employees forging the quality of superior Airmanship into NWA fleet maintenance.

manship discussed by (L/R) Fisher; E. Koerner, Ass't. Overhaul Director; H. Zinn, Overhaul Director.

C. G. Magnuson, Powerplant-Accessory Overhaul Supt., and J. A. Zechiel, Airframe-Component Overhaul Supt., (L/R), integrate duties.

July 4, 1917—"I wasn't asleep, I was scared stiff," says Capt. Walter R. Bullock, NWA pilot who today flies Stratocruisers and epitomizes Airmanship with over 30,000 safe flying hours.

Completing subzero flight on Champions (L/R): Capt. Burke Frees, Fisher, Capt. R. C. McLaughlin, Flight Engineer Richard Frye.

NWA's president, Don Nyrop, a former chairman of the Civil Aeronautics Board and CAA administrator, told me this: "All of us here are working together to further develop our company in the highest standards of service, safety and operational efficiency. With this objective, we constantly monitor our programs with regard to the procurement of airplane parts and accessories. Our standards require us to purchase only those products which give us the highest degree of schedule reliability."

As a long-time pilot and veteran member of the aviation fraternity in several capacities—and knowing full well the problems of the air transport industry—I can appreciate the pride Northwest has in Don Nyrop as its president. I've known him personally for many years. He's a young executive who knows firsthand the importance of airline service and safety. He has brought to the airline presidency both vigor and understanding—qualities as essential to over-all airline success as Airmanship is to its operation.

In this daily operation, Northwest runs the gamut of global climatic extremes. "Many of our long-range transports pass through the most varied temperatures existing in the world—all in one flight," said Paul Sanders, Director of Line Maintenance, which is responsible for day-to-day care of the fleet. "Any one of our new DC-7C's, for example, may leave the 100-degree heat of Manila and cruise through 20- to 30-below-zero temperatures as it passes over Alaska to its stateside destination."

This means maintenance technicians must give special attention to engine function each day as they combat over-all effects of high temperature and humidity on one hand and freezing rain and subzero temperatures on the other. Ignition systems in particular are of major concern in these operational extremes. And reliability of components such as Champion Spark Plugs is vital.

"Cold weather starting difficulties from spark plug sources are virtually nonexistent," Mr. Sanders said, "and at the other extreme, starting and operational difficulties from high moisture areas and subtropic climates are also nonexistent."

Northwest has used nothing but Champions—throughout the world and in all engines and equipment—for ten years.

"We've service-tested other spark plugs during this time." Sanders said, "but the plug we adopted as standard equipment always proved superior. We're using the Champion massive electrode type now."

Northwest's fleet goes to Holman Field for progressive overhaul on the average of once every 2,000 flying hours. Engines are completely torn down and reconditioned at intervals of five months or 1,300 to 1,700 hours.

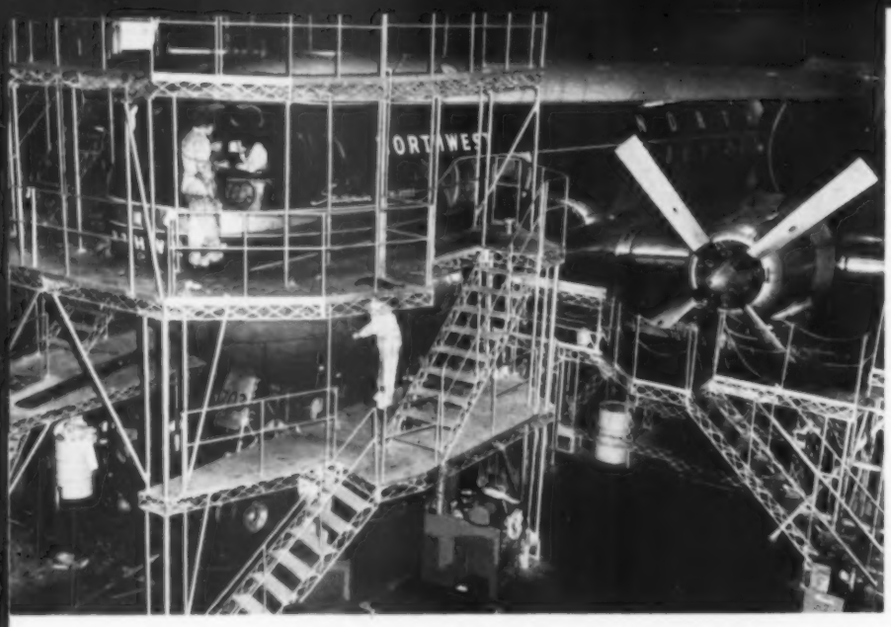
"Spark plugs are one of the chief performance factors in reliability of any engine," said Lou Koerner, senior NWA employee. "We feel that Champion can take pride in a prod-

Through blizzards and tricky heights, they rammed first commercial plane through Northern Rockies to Pacific Northwest. That NWA Airmanship feat opened "Northwest Passage." Famed crew of historic 1933 flight included aviatrix Amelia Earhart. Men (L/R): Capts. Joe Kimm, Hugh Rueschenberg, Mal Freeburg.

Mechanic Bud Morgan dubs first radar-equipped NWA Stratocruiser "Rudolph with the Radar Nose." Entire NWA pressurized fleet now carries Bendix dual-scope X-band radar.

Tom E. Cooper, Aircraft Engineering Supt., and Leonard P. Larson, Design & Performance Analysis Supt., (L/R), report: "We've used nothing but Champions for 10 years."

Superior Airmanship skills of Mechanics Norman C. Dinsmore, Hubert E. Gilbertson, David P. Vanarsdall and Clark F. Anderson go into NWA engine.



Special triple-deck scaffolding cages NWA Stratocruiser in overhaul. These $2,000,000 planes are among world's largest commercial airliners.

NWA Ford tri-motor that blazed "Northwest Passage" to Alaska's door.

Circus elephant flies 20th Century "Northwest Passage" to Alaska via NWA. Helpful stewardess is Miss Charmalee Prentice.

Discussing NWA service in Orient, (L/R): Paul H. Sanders, Line Maintenance & Ground Services Director; Fisher; Robert L. Clifford, Ignition Specialist & Ass't. Director; Carl H. Graf, Eastern Flight Operations Supt.

uct which has contributed so much to this complex business of operating modern airliners." Mr. Koerner has been with NWA 29 years and knows the meaning of service reliability.

Raleigh Zinn, NWA Overhaul Director, said: "To maintain our enviable airline record of reliability in all types of aircraft and engines, we must have products offering maximum reliability at lowest cost. In using Champions 100 per cent, we've considered initial cost, length of service, cost of spark plug overhaul and the number of overhauls feasible with that plug, plus its thoroughly tested performance reliability."

Perhaps the man closest to the actual mechanics of ignition is Carl G. Magnuson, Powerplant and Accessory Overhaul Superintendent. "A malfunctioning spark plug," he told me, "not only causes engine misfiring and consequent roughness, it also has a detrimental effect on other combustion chamber components. For this reason, let me tell you, we at Northwest are very critical in our choice of spark plugs and in our spark plug overhaul standards. For a decade now, we've found Champions the best in reliability—and second to none in economy."

Judicious economy is wisdom at work in any successful business. At Northwest it's a facet of superior Airmanship as it applies to Management *and* Maintenance.

"Our reconditioning standards are rigid," reported Robert J. Clifford, Assistant Director of Line Maintenance. "Spark plugs overhauled in our shop are of the highest quality." New spark plugs are operated about 360 engine-hours before reconditioning. The reconditioned Champions are returned for another 360 hours of good-as-new performance.

"Champion customer service is of the highest order in helping us solve new problems and in establishing economical operating practices," said Tom E. Cooper, Aircraft Engineering Superintendent. "Champion's effort put into their Annual Ignition Conferences has resulted in tremendous good—product improvement and airline-supplier understanding, for example."

Goodwin I. Luck, Powerplant Engineering Supervisor, summed up my findings at Northwest: "We want the most reliable, safest powerplants attainable in the industry today. That's why we go to all extremes to find the most reliable components for the heart of the powerplant—the ignition system. After reviewing every available spark plug in the industry, we have repeatedly come up with the same conclusion these past ten years: Champions afford us the most advantage."

Goodwin I. Luck, Powerplant Engineering Supt., and Ray Posz, top Ignition Engineer, (L/R), plan engine overhaul.

That advantage is reflected in NWA's transcontinental and trans-Pacific operational record.

And there is more to come with Northwest Airmanship as construction moves ahead on NWA's $18,000,000 headquarters at Wold-Chamberlain Field. This massive structure with 800,000 square feet of work space will house NWA's general offices, line maintenance shops and new overhaul base.

And millions of pleased passengers will continue flying the 20th Century's Northwest Passage to the Far East via the airline that superior Airmanship built—Northwest Orient.

by HERBERT O. FISHER

CHAMPION SPARK PLUG COMPANY • TOLEDO 1, OHIO

Here's a new cabin mock-up of the 4-engine Cessna Model 620, displayed at the National Business Aircraft Association convention in Denver early in October. A major portion of flight testing has been completed in current CAA certification of the 620 and a second prototype is undergoing static structural test involving 20 major operations. —(Cessna Photo.)

Cessna Formula: More Dealers, More Sales

WITH its 1958 models due for presentation in November, Cessna Aircraft Company has conducted summer management meetings in Salt Lake City, Wichita and Cincinnati for its distributors, developed a series of new sales and finance plans, launched a comprehensive sales training program and will expand its distributor-dealer organization — all geared for an intensive drive to capture more than 50 per cent of the 1958 business plane market.

Del Roskam, vice president and general manager of Cessna's commercial aircraft division, says continued increase of the airplane's utility will bring steadily growing demand for business planes. He has hinted that Cessna is investigating expansion of its line of planes. He said Cessna is just beginning to touch the product potential on its twin-engine Model 310 and pointed out that the 4-engine Model 620 is scheduled for early 1958 production. Cessna does not intend

Pressurized cabin of Cessna 620 can accommodate up to 9 passengers in addition to crew of two. Six-cylinder supercharged flat Continental engines for the 620 are in final phases of certification. They are now officially rated at 340 hp. each at 3,100 rpm. for take-off and 300 hp. at 3,000 rpm. for maximum continuous operation. Cessna tooling is on schedule and the first production airplane is due off the line in late March. —(Cessna Photo.)

Eastern distributors are shown above at a factory-conducted Cessna management meeting in Cincinnati. Del Roskam (right), Cessna vice president and general manager of the commercial aircraft division, and other factory officials used this and other regional meetings to prepare for an expanded 1958 sales drive. —(Cessna Photos.)

to obsolete any of its present models unless the market forces such a move as the line is expanded, he said.

Frank Martin, Cessna's marketing manager, striving to capture over 50 per cent of the 1958 market, says the company will draw heavily on market research, market potential and improved distribution methods to bulwark its campaign. Cessna expects to concentrate more on point-of-purchase sales tools in addition to its new finance and lease plans, saying these figure significantly in almost each airplane purchase.

A substantial improvement in the 1958 potential over that of 1957 is expected. Cessna cites studies by its director of air age education, Leslie L. Thomason, indicating a 1958 market potential of about 7,450 single-engine and 1,825 twin-engine airplanes as compared to actual 1956 sales of 5,525 single-engine and 1,050 twin-engine airplanes. Market research, according to Thomason, shows the figures to be a realistic prediction of what the industry can accomplish with the proper sales planning and execution.

Cessna's share of the market jumped from only 11.9 per cent for 1946 to 49.2 per cent for 1956 but Cessna currently holds 38.1 per cent of new business planes delivered during the first six months of 1957, according to Martin. He expects this percentage to increase during the last half of the year.

Cessna now has over 270 retail sales outlets in its world-wide organization and expects to increase this number "substantially" during 1958. A new "Cessna Model Dealer Plan," introduced at the recent management meetings for distributors, is designed to show prospective dealers a complete picture of Cessna's factory and field selling organization and help win them over to the force, according to Eldon Boyd, divisional sales manager. The new plan is a promotion package furnished at no cost to distributors and is in the form of a leather portfolio containing ten folders analyzing factory operations, products, advertising, publicity, sales promotion, finance and lease plans, customer service, guaranteed parts, sales aids for new and used planes and dealer requirements. The kits can also be used in making retail sales calls and in discussing operations with banks, finance companies and associated businesses.

This month Cessna is following up with a comprehensive sales training program in the field of management and supervision as well as retail selling for its dealers. It will also go into operation on a scheduled schooling basis for Cessna's factory force of field salesmen. The curriculum includes lectures and discussions on sales management, finance, taxation, communication, retail selling, wholesale selling, economics, advertising, public relations, publicity and promotion. Experts outside of the company as well as factory leaders will be used in conducting the 3-week course at one-week intervals throughout the year.

A new alternate demonstrator finance plan has been made available by Cessna to assist in the expansion of dealer coverage. Handled by a wholly-owned subsidiary, National Aero Finance Co., it will permit a dealer to purchase a Model 172, 180 or 182 for only about 10 per cent down, with the balance financed on declining monthly payments for 24 months. For a $10,000 airplane, as an example,

(Continued on page 69)

Western distributors are shown at a factory meeting in Salt Lake City. Central-area distributors met in Wichita. Photo at left shows Marketing Manager Frank Martin with Ted Cooper, Aircraft Sales, Ft. Worth, and King Cruse, Houston. Behind them are Dr. Leslie Thomason, Cessna air age education specialist, and Eldon Boyd, division sales manager. —(Cessna Photos.)

A New Champion for Champlin

CHAMPLIN OIL & REFINING COMPANY, one of the world's largest producers of jet fuel for the U. S. Air Force, recently purchased a new 680 AERO COMMANDER. The get up and go, plus **230 mph. normal cruising speed,** of the new 680 AERO COMMANDER is playing a vital role in the operations of the CHAMPLIN OIL & REFINING COMPANY's far flung activities from Alberta, Canada to Panama City, Panama.

CHAMPLIN

Champlin Oil & Refining Co.

The top executives of government, business and industry prefer the 680 Aero Commander. We are sure you will too.

Bill Toler
Pilot for Champlin Oil & Refining Company

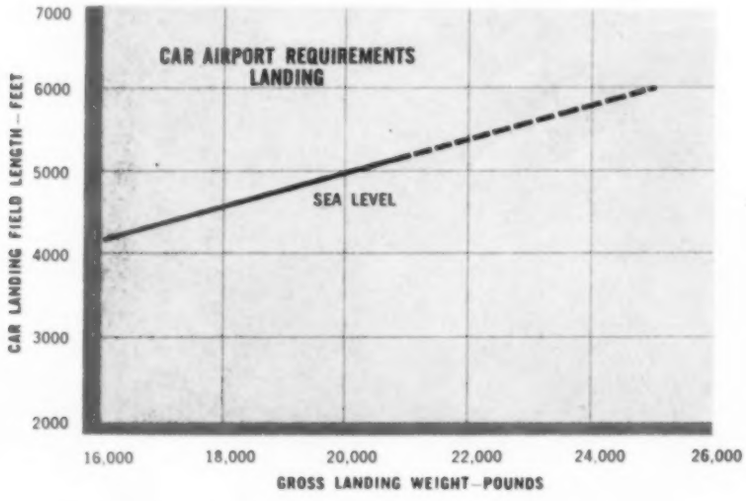
The 680 Supercharged AERO COMMANDER provides the long range comfort and high speed performance demanded by today's busy, "on-the-go" executive. It stands ready to whisk the flying executive farther and faster . . . covering the miles coast-to-coast with but one stop. The versatility of the 680 Commander makes the necessity of long concrete runways a thing of the past. The performance, beauty and comfort has made the 680 Supercharged AERO COMMANDER the most preferred executive aircraft in the industry today.

BROWN *aero corp*

3300 LOVE FIELD DRIVE—DALLAS, TEXAS

DALLAS • TYLER • MONROE, LOUISIANA

Here's another view of the Lockheed Model 329 JetStar on its first flight. Note how rear mounting of engine leaves wing leading edge clean and increases visibility from cabin windows. Lockheed chart below indicates slightly over 5,000 ft. as the required landing distance at 21,000-lb. landing weight over a 50-ft. obstacle. Boundary layer control and brakes only are used.



LOCKHEED JETSTAR

(Continued from page 28)

designed for performance close to that of the new jet airliners, although its short-field capabilities will open up to it many more airports than will be suitable for the new airliners. Its cabin pressurization and comfort levels will equal or exceed those of the airliners.

LIGHTWEIGHT LODESTAR

(Continued from page 31)

be reclined, with extra-comfort upholstering. Upholstered headrests can be attached to them with ease.

Picture windows are provided for the front end of the passenger cabin for the first time in a Lodestar, as well as for the rear of the cabin. There are four of these picture windows and they are oversize, each measuring 53 inches long by 15 inches deep. Enlarged small windows, one on each cabin side separating the picture windows, are 16 inches deep by 17 inches long. This large expanse of total window area provides a great amount of daylight inside the cabin, exaggerating the apparent spaciousness of the interior, as well as affording the passengers a much better view while flying. The Lodestar's narrow cabin and small windows have needed this treatment to add to passenger comfort.

The 9-place cabin has a custom interior which derives its appeal from simplicity. The plush is there, but it does not clutter the eye or cramp the person. A three-place EAS divan, which is berthable and conceals a bedclothes compartment beneath, and six EAS chairs feature new top-quality upholstering which is washable. Three wall-folding EAS custom game tables are provided for the chairs, which are grouped in facing pairs.

While the Lodestar's numerous baggage compartments offer advantages, the airplane has needed more space inside the cabin for large bags which can not be fitted into the smaller compartments and this airplane answers the need because re-design of the aft cabin was made possible by removal of all radio gear to the cockpit. This created space not only for large bags but additional coat closet room. A custom tier of cabinets provides efficient commissary and ice box facilities, including compartmentalized storage for different supplies.

COMANCHE PROPELLER

(Continued from page 35)

job the boxer is doing of deflecting it." Strain gages are nothing more than short lengths of calibrated wire which have a known resistance change as they stretch or compress.

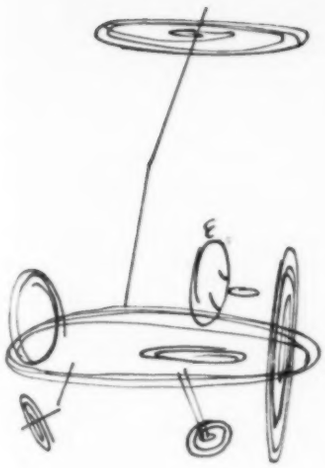
These strain gages are all connected into an electrical circuit. As the blade bends back and forth, the resistance change of the gage causes a change in the electrical current flowing in the circuit. This change in current goes from the rotating propeller through a slip-ring assembly to the electronic equipment, where it is used to swing a very small and sensitive mirror. This mirror amplifies and projects a swinging pinpoint of light onto a rapidly moving photographic paper, to record such information. A calibrating voltage of known amount is put through the same electronic equipment, so that it may be used as an accurate base for the correct determination of stress levels from the test data.

From vibration survey data can be determined the stress levels at each station along the blade, as well as the positive or negative relationship of each with the other. All modes can thus be determined and their relationship with engine speed.

Special attention is paid to the tip stations, since this area is most susceptible to rock and stone damage and is subject also to high stresses and stress orders. If not properly designed, blades can be operating in third symmetrical mode and clipping off stress reversals 9 to 12 times per engine revolution, which results in extremely high cycle accumulation for relatively low engine time.

McCauley current vibration equipment is new and modern. It consists of consolidated oscillograph and amplifier units, slip-ring assembly, grouping switch box, oscillator, and all new wiring and instrumentation. Cost for this equipment is more than $20,000, not counting the labor in preparing and wiring for handling.

All of the electronic gear and associated equipment will assemble into a station wagon for conducting ground surveys, or in an aircraft for flight surveys. The entire test is monitored by the operator through a screen, which has projected on it the same data being permanently recorded. Permanent records are made in every 50-rpm. engine increment, except in those re-



no matter what you fly

Amphib...Helicopter...Light Plane...Jet Liner...Flivver

The National Pilots Association Means Better Flying for You

Here's Why.

The National Pilots Association was organized by pilots to represent all types of United States pilots. It is the only non-profit, publicly owned association in this field, owned and run by its members. NPA members are represented by staffs in Washington and New York whose one job is to look after their aviation interests. NPA members can turn to their organization for a constructive approach to all problems affecting their flying, whether they fly for business or pleasure.

You can become a member of this fast-growing outfit and have a strong voice in shaping the aviation future of America. Check the list of special NPA benefits at the left, then mail your check today for your first year's membership.

Pilot Check List

- NPAers get a special low-rate accident insurance available only to members and sold at no profit to NPA.
- NPAers receive a regular news bulletin from Washington keeping them up to date on all decisions affecting aviation.
- NPAers attend an annual two-day meeting to hear leading figures from the aviation industry and government agencies.
- NPAers can get personal help from their national headquarters on any problem they may meet in flying or plane ownership.
- NPAers are sure their ideas reach receptive ears because they are NPA and their directors look after the interest of pilots only.
- NPAers have a say in selecting the outstanding aviator of the year. The 1957 award went to Bernt Balchen.

Annual meeting for 1957 November 15 at Adolphus Hotel, Dallas, Texas. Join now, plan to be there.

NATIONAL PILOTS ASSOCIATION
501 *Fifth Avenue. New York* 17, *N. Y.*

In accordance with the By-Laws of National Pilots Association, I hereby apply for a Membership and enclose my check for $10.00 to cover first-year dues.

My CAA Ctf. # is: ..... Class: .....
(ATR, Comm'l, Pvt., Student)

Ratings: .....

I fly a ..... Owned by .....
(Make and Model Airplane)

I soloed ..... 19..... Approx. time to date: ..... hours.

(Please type) Name .....

Street .....

City ..... Zone ..... State .....

Date ..... Signature: .....

NATIONAL PILOTS ASSOCIATION

501 Fifth Avenue — New York 17, New York

AUTHORIZED
Cessna
SERVICE

These Authorized Stations Feature Flat-Rate Service

Aircraft Sales Company
Meacham Field
Fort Worth, Texas

Champ's Aviation, Inc.
Municipal Airport
El Paso and Lubbock, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
International Airport
and Clover Field Airport
Houston, Texas

Dal-Tex Aviation, Inc.
Highland Park Airport and Love Field
Dallas, Texas

Executive Aircraft Company
Municipal Airport
Kansas City, Missouri

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Poelman Aircraft Co.
New Orleans Airport
New Orleans, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

Southwestern Skyways, Inc.
Municipal Airport
Santa Fe, New Mexico
and Ogden, Utah

Sunny South Aircraft Service, Inc.
Broward International Airport
Fort Lauderdale, Florida

Walston Aviation, Inc.
Civic Memorial Airport
East Alton, Illinois

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

SERVICE SATISFACTION

SMILING SERVICE is what you expect and always receive when our Authorized Cessna Service Stations solve your maintenance needs! We furnish factory skills, factory equipment and factory satisfaction. Cessnas are our specialty . . . and we follow a policy of giving Cessna users a little more, a little better service — LIKE OUR FAMOUS 1-2-3 CESSNA FLAT-RATE SERVICE!

1 You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all maintenance needs.

2 You get genuine Cessna parts and factory-trained workmanship.

3 You save money and time and we stand behind every job for your fullest satisfaction.

Announcing a new extra service for Cessna owners

Now—if you request—Cessna will notify you *directly* when a Service Letter applicable to your airplane is sent to your Cessna dealer!

This new Owner Notification Mailing Service is a Cessna program that supplements your dealer's follow-up system—it's an *extra* program that will help you keep up with the latest news about improved operating techniques, preventative maintenance recommendations, modification suggestions and other information that increases the utility of your Cessna airplane.

If you want to take advantage of this new, direct notification service—and we hope you do—see your Cessna dealer or mail this coupon *today!*

5 GREAT CESSNAS 172 180 182 310 320 THE COMPLETE AIR FLEET FOR EVERY BUSINESS NEED

AUTHORIZED CESSNA SERVICE MEANS EXTRA SERVICE:

Factory-approved equipment
Complete stock of genuine Cessna parts
A written owner's service policy
Prompt quotations
Flat-rate charges
Itemized invoices
Factory-trained mechanics
... and many other extras.

Cessna Aircraft Co., Dept. FM-11,
Wichita, Kansas

Cessna

Please place my name on the Cessna Owner Notification mailing list to be notified when a Service Letter is issued pertaining to my airplane.

I own Cessna Model _____ License _____ Serial _____

Name _____

Mailing Address _____

City _____ Zone _____ State _____

This is a voluntary service by Cessna, and Cessna assumes no responsibility or liability in connection therewith.

gimes where more detailed analysis is indicated, where records are taken in every 25 or even 10-rpm. increments. As soon as a roll of filmed records is completed, it is processed through a Fisher Processall which is portable and maintained right on the test site. The Processall develops, fixes, dries, and rolls the filmed records all in one operation, so that the data may be viewed on the spot to ascertain what operating regimes require study.

The analysis of all the surveys run on the various designs produced the final optimum shape, which successfully shifted the critical resonances outside the engine operating speeds. The vibration stresses are required to be a low conservative figure when also compared with those maximum steady stresses, resulting from the thrust and centrifugal forces also acting on the blade.

Though time-consuming and exhausting, the results of such surveys and analyses are well worth while when they result in a design capable of operating indefinitely with complete safety. Pilots who fly the Comanche need give no thought to propeller safety and performance, which have already been confirmed by trained McCauley engineers.

JUST AMONG OURSELVES

(Continued from page 19)

seminar, every business pilot is his own safety engineer. As you go farther down the line in the aircraft ownership spectrum you soon cross over the line into the area where the safety record is a national and industry disgrace. These are the people who are constantly making the gory headlines by over-extending their proficiency as pilots, usually in weather, or ignoring the operational and servicing instructions as published by the manufacturers in specific manuals which are kept up-to-date. Of course there is a tremendous turn-over in the used plane field and part of the trouble may be traced to the fact that the purchaser of a used aircraft rarely gets the manuals. But this is not the point. The manuals are there for the asking and the big worry is that pilots in general do not read or follow them even when at hand.

There is no easy, quick solution to the education of pilots in general aviation. They do not seem to be disturbed by the awful fatality rate in what used to be called "private flying." They can not be forced to read or to attend meetings. In fact those who need to keep up the most are the least likely to keep informed or go to pilot meetings designed for their own welfare, knowledge and safety. But until the broad base of general aviation pilots is reached and the general level of flight proficiency and approved aircraft operational methods are increased, the heavy millstone of aviation accidents will remain around the industry's neck, slowing down progress and expanded use of the airplane.

Meetings such as those sponsored by Reading Aviation, Airwork Corporation, Southwest Airmotive, Pacific Airmotive, a growing number of flying clubs and the Flight Safety Foundation are extremely valuable toward whipping the problem. It is especially important for every company, large or small, with a financial stake in utilitarian aviation, to get behind and support the work of the Flight Safety Foundation which, as a non-profit organization, is dedicated to aviation safety at all levels. The toughest nut to crack right now is not the overworked fear of mid-air collisions and the so-called overcrowded airspace but rather in the realm of suicidal accidents that occur in marginal weather and in improper operations of utility aircraft.

The Federal agencies haven't been able to reduce the accident rate one iota. If every pilot is to learn that he is his own safety engineer, we're convinced the Flight Safety Foundation must be given the assignment by voluntary support of and unanimous request from the industry. This non-profit organization is directed and staffed by able and experienced authorities. Their thorough efforts have already improved air safety impressively and will continue to score new gains in the raising of pilot proficiency.

CARL KOTCHIAN, vice president of Lockheed Aircraft Corp., and general manager of its Georgia division at Marietta, has announced a reorganized Georgia sales department with greater emphasis being placed on commercial sales of the new JetStar utility transport and Hercules propjet cargo airliner. W. G. Myers is sales director and R. I. Mitchell is sales manager. Both planes will be produced at Marietta.

—(Lockheed Photo.)

Invitation To Disaster

RECENTLY ANNOUNCED drastic reductions in military aircraft programs are severe enough to be properly considered as emergency action, seriously reducing the effectiveness of air preparedness.

Why? There has been no move toward peace by the Russians, who still pledge themselves to destroy the American way of life. In fact, the Communists waited until after the heavy military aircraft slashes here to release their ominous news of long-range intercontinental ballistic missile firings.

Trouble spots around the world are boiling just as vigorously as ever, if not more so — they offer no genuine encouragement of peaceful solution.

It doesn't take a diplomat to discern that this old world is just as troubled now as it was before the emergency cancellations of urgently needed military aircraft projects. In fact, the politicians admit that they have ordered emergency reductions for one reason only — the budget.

It is a sad point in government administration when the country's defense requirements are determined by what is in the treasury rather than by the actual military appraisal of an enemy's capabilities and intentions.

This is sheer folly. It is dangerous to balance our national existence against political budget desires — in the very face of open threats from an enemy whose formidable resources can not be doubted.

We are inviting disaster when we under-estimate the intentions and military capabilities of the steadily-advancing Communists. To successfully fire an intercontinental ballistic missile is a tremendous achievement — more than anything else, it is proof-positive that the Russians are playing for the highest possible stakes. It means that now, more than ever, the Communists have vast military aircraft programs. We can be sure that all this will never be auctioned off to junk dealers or dumped into the sea for budgetary reasons. It will be used for war and nothing else but war — at the first opportunity to make the most of American stupidity and weaknesses. It is disastrous to sacrifice our air might for the convenience of political expedience.

airplane
OVERHAUL
and
REPAIR

THIS IS DOWNTOWN AIRPARK

Service Headquarters for Airplanes

There's only one kind of service which can give airplane owners what they want—and that's *complete* service. The facilities and personnel of Downtown Airpark are unsurpassed anywhere. Certified A & E mechanics, with the latest equipment and tools at their disposal, handle any maintenance problem, including aircraft repair, and complete engine overhauls. Downtown maintains a large staff of mechanics, and a complete parts department, so that your airplane will be out of service as short a time as possible. Ask for our list of satisfied customers throughout the United States and many foreign countries.

"JUST 5 MINUTES FROM DOWNTOWN"

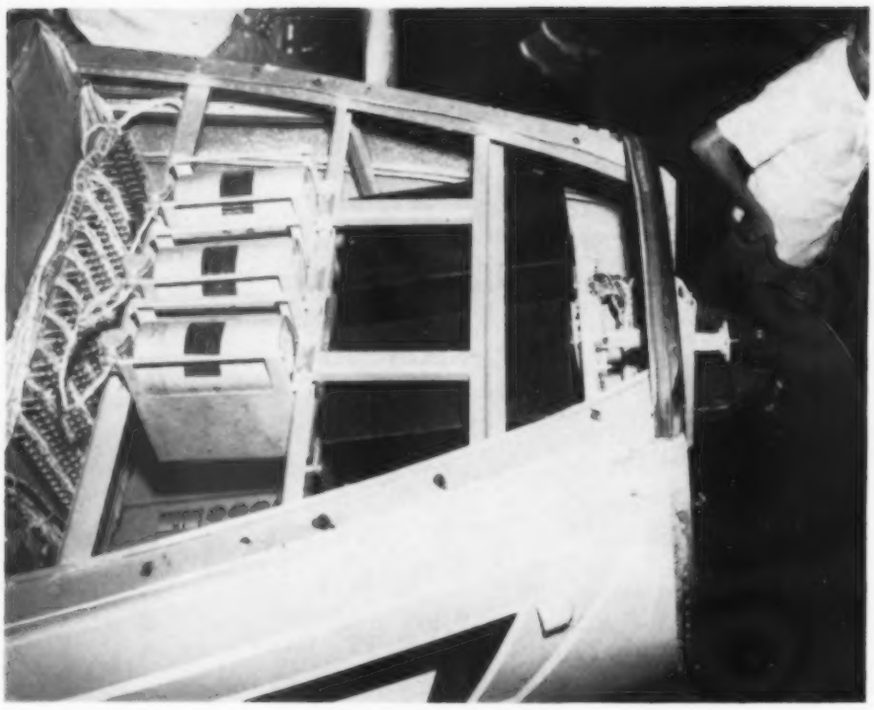
DOWNTOWN OKLAHOMA CITY *Airpark* INCORPORATED

OVERHAUL & REPAIR • PAINTING • METALWORK
AERO COMMANDER & LYCOMING DISTRIBUTOR FOR OKLAHOMA

Above, one of Downtown Airpark's certified A & E mechanics at a valve-grinding machine. Each man in the shop is a qualified expert in his particular field of airplane overhaul and repair.

All repair work, such as the aircraft sheet-metal work shown above, is carefully directed by the shop supervisor—assuring the airplane owner the best possible job, with the least possible delay.

1701 S. Western • MElrose 4-1456 • Oklahoma City, Oklahoma



Nose package on this TXL Oil Beech Super 18 contains, from left to right, electrical junction box, three Wilcox power supply units, RCA AVQ-50 black boxes which are receiver-transmitter and accessory units, and 12-in. radar dish antenna ahead of bulkhead. Wave guide is only 9.5 ins. long. Beneath triple power supply units is rack containing all miniaturized radio equipment, most of it Wilcox. Racks snap out for easy accessibility.
—(Gray Aircraft Service Photo by Tom W. Collins.)

Small Radio-Radar Package

BY using small-size, lightweight radio communications and navigation equipment to cut down on space and weight requirements, more Beech Super 18 light transports are being equipped with new lightweight airborne radar for weather avoidance.

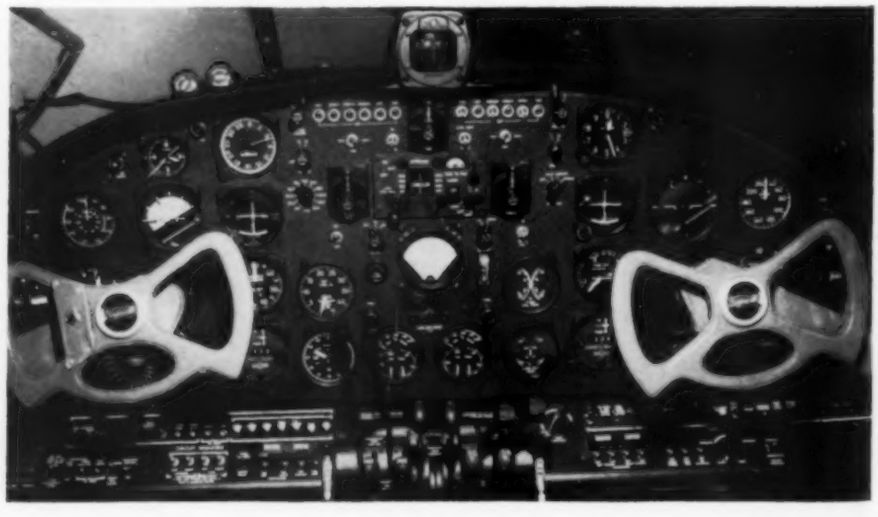
An interesting example is the recent installation by Gray Aircraft Service of Dallas in a new Super 18 delivered to TXL Oil Corp., Pat Malone, chief pilot, and Ralph Hughes, co-pilot. This airplane is used extensively in Southwestern United States areas having considerable thunderstorm activity. Weather avoidance radar makes for more dependable trip scheduling and completion, eliminates delays and greatly increases passenger comfort.

Making possible the installation of an RCA AVQ-50 radar in the TXL Beech was the use of lightweight, small-size Wilcox radio equipment, including dual crystal-controlled omnis, 360-channel VHF transmitter, 560-channel VHF receiver, 3-light marker beacon, glide slope, ADF and Wilcox power supply, the latter being in three units. In addition, equipment includes ARC CD-1 course director, ARC T-21 transmitter and ARC isolation amplifier.

The complete installed weight of all this equipment, plus that of the radar and its separate 900-VA inverter power supply, totalled 356 lbs. Racks for the equipment are included in the weight. Practically all of it is in the nose, which, in the Super, is open for radio and radar installation; all fuel is in the wings.

A standard Beech glass nose has been used with the radar until a Chamberlain radome can be installed.

Smallness of radar antenna is seen in photo at left, with small, 3-in. scope shown at center of instrument panel, just below Wilcox ADF control head. Antenna scans 80-degree sector ahead at rapid 85 looks per minute and may be tilted 10 degrees up or down.



Place your BEECHCRAFT in the

SKILLED HANDS

of the J. D. REED COMPANY

Beechcraft Service Specialists

In aircraft service and maintenance there is no substitute for EXPERIENCE. Over a quarter of a century of such experience has made the J. D. Reed Company one of the most qualified SUPER REPAIR STATIONS in the country to serve the requirements of private and executive aircraft owners.

Through our many years in business we have found that the only teacher for know-how is EXPERIENCE. That's why the J. D. Reed Company is able to handle any aviation problem efficiently and economically. Our work today is backed by a thousand yesterday experiences which means **a skill that's hard to match.**

At the J. D. Reed Company you have a great deal to gain from the experience of our many satisfied customers. Here you will find the job — big or small — is always done right. On your next trip drop by the J. D. Reed Company and let us show you how our kind of experience can better serve you and reduce your maintenance costs.

J. D. REED CO. INC.
SALES SERVICE
Beechcraft
DISTRIBUTOR
MUNICIPAL AIRPORT
HOUSTON, TEXAS

keep your Executive Team at full strength

The "Executive Teams" of thousands of firms are strengthened by the rugged dependability of their Beechcrafts. The day in-day-out performance of these aircraft allow more executive time for urgent business . . . time for important conferences in far-away places . . . more time to explore new fields . . . more time for pleasure and relaxation.

We can help keep your team at full strength by insuring against loss of executive time by out-of-service aircraft. Servicing and maintenance of the "Business Fleet" is a specialty of our factory trained service staff. Let us check your airplane today . . . We will also be glad to explain our regular maintenance plan for greater safety — lower costs.

AIRCRAFTCO, INC.
New Municipal Airport
Wichita, Kansas

AIRCRAFTSMEN, INC.
Will Rogers Field
Oklahoma City, Oklahoma

ALAMO AVIATION, INC.
Municipal Airport
San Antonio, Texas

ANDERSON AIR ACTIVITIES
General Mitchell Field, Milwaukee, Wisc.

ATLANTIC AVIATION CORP.
- Teterboro Airport
  Teterboro, New Jersey
- Logan International Airport
  East Boston, Massachusetts
- International Airport
  Philadelphia, Pennsylvania
- New Castle County Airport
  Wilmington, Delaware

BUTLER CO., AVIATION DIVISION
Municipal Airport, Chicago, Ill.

CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport, Shreveport, La.

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Manager
Love Field, Dallas, Texas

ELLIOTT FLYING SERVICE
Municipal Airport, Davenport, Iowa

LOPEZ GRACE AVIATION, INC.
Building No. 3 and No. 18
Broward County International Airport
Fort Lauderdale, Florida

THE NORMAN LARSON CO.
PLANESERVICE, INC. (Service Division)
Van Nuys Airport, Van Nuys, Calif.
(Los Angeles Area)

J. D. REED CO., INC.
Municipal Airport, Houston, Texas

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport, Indianapolis, Ind.

TEXAS AVIATION CORPORATION
G. K. Roberts, Pounds Field
Tyler, Texas

TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport, Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport, Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
Hangar 8, Municipal Airport, Tulsa, Oklahoma

Put Your BEECHCRAFT in BEECHCRAFT Hands

TAKE YOUR TIME

AND STILL DO MORE BUSINESS

go farther!

carry more!

Four-place Beechcraft Bonanza. Range — up to 1170 miles. Speed — up to 206 miles per hour.

You can meet the demand of crowded business schedules with Beechcraft Bonanza travel . . . go when you want to go, where you want to go . . . economically, comfortably, fast . . . and take more time for business!

With the Beechcraft Bonanza you can enjoy more built-in extras than with any other four-place airplane! **GOES FASTEST** Speeds up to 206 mph, with a cruising speed at least 30 mph faster than its nearest competitor! **GOES FARTHEST** In the Bonanza, you fly up to 1170 miles non-stop! **QUIETEST** The Bonanza is the quietest airplane in the skies! **MOST VISIBILITY** The largest windows in the sky, and modern, low-wing design give maximum safety and enjoyment to pilot and passengers! **MOST USEABLE** Only the Bonanza can carry so much passenger and baggage weight! **EASIEST TO FLY** No airplane is easier to fly than the Bonanza — and no other airplane offers such dependable, rugged construction!

New leasing and financing plans make Bonanza ownership possible at a cost far less than you may think. For information, see your Beechcraft distributor or dealer, or write Beech Aircraft Corporation, Wichita 1, Kansas, U. S. A.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

NATIONWIDE ROUNDUP:

New Business In the Hangar

NATIONAL BUSINESS AIRCRAFT ASSOCIATION annual safety awards at NBAA's 3-day 10th annual meeting in Denver early in October went to 43 business pilots having flown 1,000,000 accident-free miles each and 88 business pilots having flown over 500,000 accident-free miles each. These 131 pilots represent a total of 115,853,845 miles flown in business aircraft without a dent to their planes or a scratch to their passengers. Forty-two NBAA member companies were cited for having completed 1,000,000 miles of business aircraft operations without accident.

Last year NBAA presented 29 pilots with the million-mile awards, 59 with half-million-mile awards and 26 firms with company safety awards. "The growth in the number of these award winners focuses attention on the remarkable safety records being established by business firms operating their own aircraft and calls even greater attention to the tremendous growth of business flying throughout the United States," commented Ralph E. Piper, chief pilot for Monsanto Chemical, St. Louis, and chairman of NBAA's awards committee.

Million-miler member-pilot safety award winners are as follows: Robert F. Allen, Frankfort Oil, Dallas; Harry R. Anderson, Chrysler Corp., Detroit; William N. Benedict, Ford Motor, Dearborn; David H. Bishop, Sinclair Refining, Tulsa; John A. Bouteller, Jr., Service Pipeline, Tulsa; Stephen L. Brown, Continental Can, Morristown; Joseph J. Budro, Champion Paper, Hamilton, Ohio; Raoul Castro, International Harvester, Chicago; Joseph W. Clemow, Eastman Kodak, Rochester; Roy L. Coyle, Parker Pen, Janesville; Wilfred R. Dotter, International Harvester, Chicago.

Bruce D. Grove, Gulf Oil, Dravosburg, Pa.; James G. Guess, Burlington Industries, Greensboro, N. C.; Buford N. Haddock, Falstaff Brewing, St. Louis; Robert L. Hansen, Kroehler Manufacturing, Naperville, Ill.; Edwin Hefley, Carthage Co., Shreveport; Bruce B. Heath, Continental Can, Morristown; William P. Hobson, Hercules Powder, Wilmington; Charley W. Johnson, Reynolds Metals, Louisville; James E. Kidd, Anchor Hocking Glass, Lancaster, Ohio; A. C. Korb, Westinghouse, Pittsburgh; Robert J. Kusse, Fruehauf Trailer, Detroit; J. Sheldon Lewis, Thatcher Glass, Elmira, N. Y.; Edwin C. Little, Westinghouse, Pittsburgh; Carl J. Lund, International Paper, Mobile; B. Owen Mayfield, Hercules Powder, Wilmington; S. M. Maxwell, Burlington Industries, Greensboro; Samuel A. Merrill, Goodyear, Akron.

George E. Meyers, Monsanto Chemical, St. Louis; Norman L. Mitchell, Minneapolis Star & Tribune; Raymond H. Murphey, Service Pipeline, Tulsa; Ralph E. Piper, Monsanto Chemical, St. Louis; Ralph W. Prock, Cabot Carbon, Pampa, Tex.; Richard Ranaldi, Petan Co., Santa Barbara; G. P. Rider, Delta Drilling, Tyler, Tex.; Nelson U. Rokes, Proctor & Gamble, Cincinnati; Thomas J. Schuetz, International Harvester; J. Ralph Seidner, Goodyear, Akron; George W. Sherwood, Briggs Manufacturing, Warren, Mich.; Don M. Teel, U. S. Steel, New York; Richard N. Thurston, Monsanto Chemical, St. Louis, and Philip van Treuren, Dairypak, Cleveland.

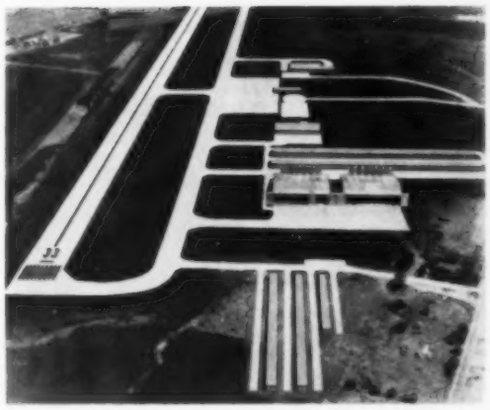
NBAA member-pilots with 500,000-mile awards are: W. D. Adams, Proctor & Gamble, Cincinnati; W. E. Ames, Hercules Powder, Wilmington; H. W. Ahrns, Ohio Oil, Findlay; W. F. Austin, Lukens Steel, Coatesville, Pa.; R. Baker, Minneapolis-Honeywell, Minneapolis; J. M. Banker, Armco Steel, Middletown; E. W. Bauer, Ohio Oil, Findlay; C. L. Boyd, Eastman Kodak, Rochester; R. W. Bryson, Anchor Hocking Glass, Lancaster, Ohio; W. G. Buckingham, Sundstrand, Rockford, Ill.; W. S. Chapman, Lear, Grand Rapids; K. G. Colthorpe, Champion Spark Plug, Toledo; W. C. Correll, Waterman Steamship, Mobile; E. O. B. Dahl, American Can, New York; K. J. Eldred, Ford Motor, Dearborn; Carl Forrester, Barwick Mills, Atlanta; J. M. Grogan, Pillsbury, Minneapolis; J. C. Hamilton, Ford Motor, Dearborn; C. C. Hardy, Southern Natural Gas, Birmingham.

C. E. Hayes, Champion Paper, Hamilton, Ohio; R. F. Hinds, Chemstrand, Decatur, Ala.; A. Hinkle, Minnesota Mining, St. Paul; G. L. Hobbs, Beloit Iron, Beloit, Wis.; J. A. Hopkins, American Can, New York; K. F. Horton, Sinclair, Tulsa; D. W. Hubbard, Tobin Map, San Antonio; W. A. Ivey, Southern Natural Gas, Birmingham; A. L. Jones, U. S. Steel, New York; C. S. Kincaid, Service Pipeline, Tulsa; J. L. King, Langenfelder & Son, Baltimore; C. R. Kinney, Burlington Industries, Greensboro; C. G. Koeling, Kearney-Trecker, Milwaukee; J. A. Korver, Ford Motor, Dearborn; J. L. Lacey, Sinclair, Tulsa; A. Lippa, U. S. Steel, New York; M. C. Lora, Ohio Oil, Findlay; G. C. Lowe, Ohio Oil, Findlay; W. I. Lucas, Chrysler, Detroit.

J. H. Luchow, Proctor & Gamble, Cincinnati; J. M. Lycan, Texas Eastern Transmission, Shreveport; R. A. McArdle, Service Pipeline, Tulsa; M. McDowell, Gerstenlager Co., Wooster, Ohio; T. R. McFarland, Ohio Oil, Findlay; J. C. Magnus, Minneapolis-Honeywell, Minneapolis; E. G. Marquis, Cluett, Peabody, New York; S. H. Massey, Hercules Powder, Wilmington; A. F. Minich, Sinclair, Tulsa; M. J. Morgan, Texas Eastern, Shreveport; C. B. Nichols, Service Pipeline, Tulsa; D. B. Olsen, Aurora Gasoline, Detroit; G. H. Owen, Texas Eastern, Shreveport; W. C. Pague, Armco, Middletown; R. H. Pates, Minnesota Mining, St. Paul; D. E. Phillips, Ohio Oil, Findlay; F. B. Polston, Sinclair, Tulsa; J. E. Powers, IBM, Poughkeepsie; R. F. Powers, Aerojet, Azusa; A. L. Rainwater, Service Pipeline, Tulsa; R. Rammel, Ohio Oil, Findlay; C. W. Reeder, Goodyear, Akron; D. T. Richardson, Minnesota Mining, St. Paul; J. M. Richter, Columbia-Geneva Steel, San Francisco; H. N. Riddle,

SPERRY'S NEW 5-INCH H-10 gyro horizon is shown at left below by the conventional 3-in. instrument now in use. New H-10 weighs 8 lbs., is integrally lighted and offers a "natural" presentation previously available only on repeater-type instruments. Button lever activates quick erection system in flight to eliminate violent maneuver errors. "Off" flag warns of gyro power failure.

WHERE THERE IS PROGRESS./ THERE IS AERO COMMANDER



The first official landing at the new multi-million dollar ADDISON AIRPORT in Dallas was made this month by a 680 Super AERO COMMANDER owned by John D. Murchison. The Aero Commander is representative of the advanced thinking of enterprising American businessmen for safe, economical and practical air transportation.

The new $2,291,000.00 Addison Airport was built for the exclusive use of private, business and executive operators. The field's 4,500 foot asphaltic runway will be open to all types of private traffic. All size hangars will be available from the "T" hangar for smaller aircraft to the 160′ by 160′ size for the heavy twin-engined aircraft.

Pictured at left, from left to right, are Mr. Bill DeSanders, representing the founders of Addison Airport, Mr. Guy Dennis, former owner of the land where the new airport has been constructed, Mr. Walter Mims, pilot for John D. Murchison, and Mr. W. C. (Bill) White, Vice President of Brown Aero Corp., Aero Commander Distributors, as they land at Addison Airport, the world's newest and finest exclusive executive airport.

BROWN *aero corp*

3300 LOVE FIELD DRIVE—DALLAS, TEXAS

DALLAS • TYLER • MONROE, LOUISIANA

Put These FACTORY Facilities to Work for You . . . When the Next Overhaul Time Rolls 'Round

The Men and Machines That BUILT Your Engine Originally Are Best Qualified to Restore It to Like-New Condition

Factory re-manufacture as conducted at Continental Motors differs in vital respects from even the most thorough overhaul obtainable in the field. That is because neither the experience of Continental production personnel, nor the precision machinery implementing that experience, can be matched outside the Continental plant . . . Every re-manufactured Continental engine is delivered fully run-in, ready for use in normal flight without further run-in or slow time. Rigid quality control applies throughout re-manufacture exactly as it does to original production . . . WITH YOUR FACTORY RE-MANUFACTURED CONTINENTAL, YOU RECEIVE NEW LOG BOOK, STARTING AT ZERO HOURS IN ACCORDANCE WITH CIVIL AIR REGULATION 43-24, COVERING SPECIFICATIONS FOR REBUILT ENGINES.

ALL CONTINENTAL AIRCRAFT ENGINE MODELS ARE AVAILABLE AS FACTORY RE-MANUFACTURED ENGINES

When buying a utility plane, choose one with all the plus values that have made Continental pilots' first choice.

Continental Motors Corporation

AIRCRAFT ENGINE DIVISION

MUSKEGON • MICHIGAN

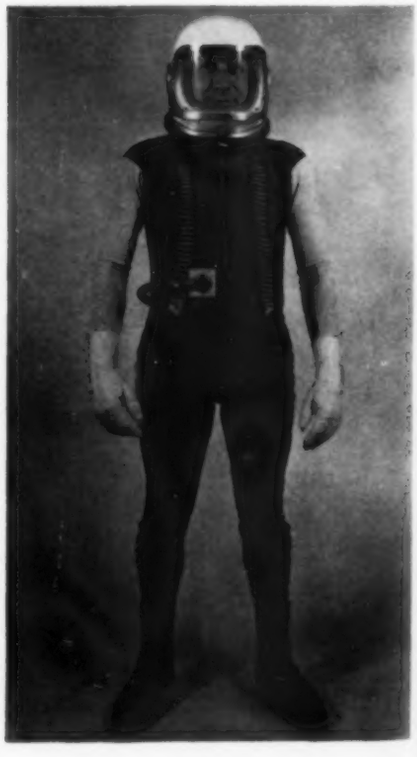
Sundstrand, Rockford; R. R. Rigg, Owens-Illinois Glass, Toledo.

J. P. Rowan, Gulf Oil, Dravosburg, Pa.; H. L. Sefton, Ohio Oil, Findlay; D. E. Severts, Service Pipeline, Tulsa; W. E. Shaughnessy, American Cyanamid, Stratford; G. H. Shortlidge, U. S. Steel, New York; S. C. Smith, N. Y. Wire Cloth, York, Pa.; E. L. Springer, Service Pipeline, Tulsa; W. A. Steinhagen, Union Bag, Franklin, Va.; K. F. Styne, Noland Co., Newport News; F. J. Thera, Minnesota Mining; W. F. Underwood, Sinclair; W. R. Verran, Ohio Oil, Findlay; J. D. Wallace, Proctor & Gamble, Cincinnati; H. W. Wallingford, Texas Eastern, Shreveport; W. W. Walter, Associated Aviation Underwriters, Dallas; H. L. Wells, Sinclair, Tulsa; R. C. Whitbeck, Owens-Illinois, Toledo; R. A. Whitworth, Coca-Cola, New York; A. J. Wilson, Champion Paper, Hamilton, Ohio; J. M. Wolfe, Service Pipeline, Tulsa; H. E. Wood, Gillette, Boston; P. E. Wynn, Service Pipeline, Tulsa, and R. A. Yoakam, Ohio Oil, Findlay.

SALINAS AIRCRAFT, INC., is the new name of Northern Aircraft Co.,

(Continued on page 63)

SUPERSONIC FLIGHT SUIT, developed by the personal equipment subcommittee of the Industry Crew Escape Systems Committee and modeled here by W. H. Reincking, Convair design specialist in charge of human engineering, offers improved protection and comfort. It includes a partial pressure suit combining features embodied in five existing suits. Helmet is connected by a ball-bearing ring, two-piece gloves give finger dexterity and boots float.



Aircraft Electronics Association

Radio Shops Organize To Improve Standards

LEADING aircraft radio sales, service and installation shops serving business and executive aviation sent representatives last month to a 3-day meeting in Minneapolis, where they organized a new and pioneering trade association, Aircraft Electronics Association, Inc. The first officers are Charles O. Peacock of Aircraft Radio and Accessory, Denver, president; Philip L. Stomberg, Minnesota Airmotive, Minneapolis, vice president; Gene Baker, Chamberlain Aviation, Akron, secretary, and Calvin W. White, Airmar Radio Service, MacArthur Field, Ronkonkoma, New York, treasurer.

Rapid strides in the development of aircraft radio and electronics equipment and ever-increasing requirements for its proper installation, operation and servicing have made the need for such a trade association acute. During the organizational meeting, reports from all over the country emphasized the problems faced by aircraft radio specialists. These are indicated in the following summation of the association's aims and objectives by Chuck Peacock, one of the leaders in starting the group and its first president:

"We need standardization on an industry-wide basis and closer, more effective relations between equipment manufacturers and dealers and shops. This standardization should include not only equipment requirements but installations and labor and service costs. We need a code of ethics to guide our customer relations and we need to promote an educational campaign for a more practical understanding of modern electronic equipment. We should promote a practical representation and understanding of our needs through ARINC. Minimum requirements are needed for shop personnel. Our members need to cooperate in the raising of standards for our business operations and public relations."

Many of the problems involved were discussed during the meetings with representatives of the CAA and equipment manufacturers. Clyde Angel of the CAA from Washington said there has been a phenomenal growth of approved radio repair shops, which now total more than 147 in number, with most areas of the country served locally. Coupled with the greatly-increased use of modern and quality aircraft radio, this availability of skilled installation and servicing will result in greater CAA insistence on adherence to regulations governing radio equipment. Until now, CAA airways experts have worked with the business flying shops. Now CAA will begin using general aviation electronics inspectors for the first time in the interest of adherence to regulations.

It was brought out that an airplane is considered unairworthy if required radio equipment for its use is inoperative. In the realm of required equipment, CAA approved radio should be required for IFR and controlled VFR flight. In a panel discussion, it was brought out that an airplane's radio "system" should be considered for performance rather than radio "equipment" and that radio system engineering and installation is more properly within the province of qualified radio men rather than A & E mechanics. It was suggested that CAA put out a "sample" manual to which all repair stations could conform, rather than have each shop prepare its own manual subject to each individual inspector's likes and dislikes.

Manufacturers of leading makes of radio equipment attended the meeting and participated in discussions. One of the complaints to them was against premature release of information on future equipment which leads customers to believe it will be available immediately. This not only

Military tactics today demand

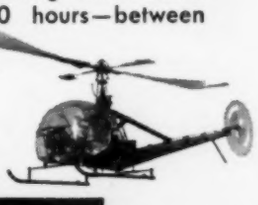
AIR mobility for GROUND forces

The Army H-23C, built by Hiller, is currently in widespread service.

One of the oldest requirements in military tactics is *mobility*. In today's atomic concepts, that means getting the Army *off the Ground*.

So well proved are advantages of the helicopter for Army use that the only big question now is how to reduce operating costs so that *more* helicopters can be used by *more* units!

The Army H-23D now in production and scheduled for delivery this year represents a major step forward in the goal of attaining lower costs through longer service—1000 hours—between overhauls.



The Army H-23C, 400 HRS.

The Army H-23D is the first helicopter designed to incorporate the Army's concept of a 1000 hour overhaul cycle on major components. 1000 HRS.

Engineers: write for opportunities with an industry leader in an ideal California locale.

HILLER HELICOPTERS

PALO ALTO, CALIFORNIA

confuses customer planning for new installations but makes it difficult if not impossible to sell stocks of equipment already on hand. Manufacturers said they were guarding against this practice and that delivery delays often are caused by unexpected delays in receiving components from suppliers. Manufacturers also urged shops to return parts which fail or malfunction, along with an informative report covering the nature of the trouble, so that the difficulties can be solved.

The new association will operate on a committee set-up. Its next meeting will be held in Dallas at a date to be selected. Committee chairmen are as follows: Charter and by-laws, Gene Baker, Chamberlain Aviation, Akron; finance, Cal White, Airmar, Ronkonkoma, N. Y.; program, Bob Anderson, Anderson Aircraft Radio, Detroit; arrangements, Lee Lanford, Associated Radio, Dallas; public relations, Robert O'Connor, E. Farnell Co., Lantana, Florida; membership, Joe Munizza, Mid-States Aviation, Sky Harbor Airport, Chicago. Officers and committee chairmen are directors of the group.

Others attending the Minneapolis meeting included the following: Hilary E. Johnson, General Aircraft Supply, Michigan; Al Warner, North Central Airlines, Minneapolis; Emi A. Bjorkman, CAA, Minneapolis; Don J. Lisor, ARINC, Minneapolis; Robert Van Zandt and Moose Redhead, Wilcox Radio, Kansas City; Peter Rogers, Bendix Radio, Maryland; Earl W. Springer, Springer Radio, Indianapolis; Max Harris, Collins Radio, Dallas; Joe Lyon, Collins Radio, Cedar Rapids; Dave Robinson and John Whitehead, RCA Custom Aviation, Los Angeles; Jay Ahmann, Bendix, Los Angeles; Tom Ashley, FLIGHT MAGAZINE, Dallas.

E. C. Christerson, Collins Radio, Dallas; R. Craig Christie, Collins Radio, Cedar Rapids; Bert Rashkow, Narco, Fort Washington, Pa.; O. McAtee, Bendix Radio, Baltimore; H. S. Christensen, ARC, Boonton, N. J.; Tom Wallace, Wright Airborne Electronics, Kansas City; W. V. Viscarra, Flite-Tronics, Burbank; Wendell Bell, Anderson Aircraft Radio, Detroit; Glenn Bliss, Land-Air, Cheyenne; Norman Brumbaugh, Norman Radio, Ft. Worth; C. O. Caldwell and Frank Fisher, Gopher Aviation, Rochester, Minn.

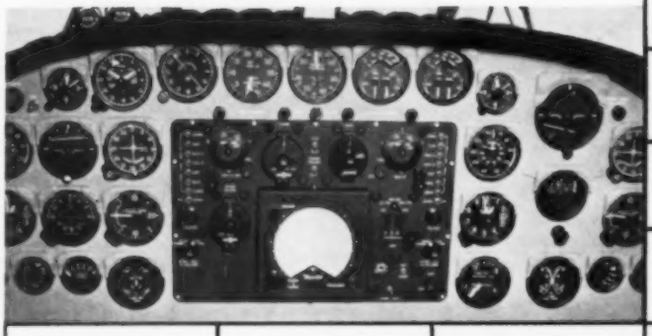
William F. Daniel, Usher Aviation, New Haven, Conn.; Walter Ewing, Currey Sanders Aircraft, Shreveport; Ken Faulkner, Faulkner Air Radio, Houston; Wes Fielding, Bayaire Avionics, Oakland; Earle Gardiner, Executive Radio, Santa Monica; Lynford Hampton, Atlantic Aviation, New Castle; Harold Jeffrey, AiResearch Aviation Service, Los Angeles; Fred Karpurk, Aero-Air, Portland, Oregon; Everett Kriese, Aviation Radio, Milwaukee; Donald Ladd, Page Airways, Rochester, N. Y.; Winford Lentz, Southern Airways, Atlanta; George Matthews, Matthews Electronics, San Antonio.

Charles J. Melville, Reading Aviation, Reading, Pa.; Herman Miller San Jose Avionics, San Jose; R. D Moore, Allied Instrument Labs, Houston; R. B. Nelson, Technical Enterprises, Weston, Ontario; E. C. Panissidi, Qualitron, Burbank; Thoma Price, Dot Airtronics, Lindenhurst N. Y.; John Russell, Butler Aviation Melrose Park, Ill.; Leon Ryker, Buffalo Aeronautical, Buffalo, N. Y.; Edward Sapko, L. B. Smith, Miami; Car Schroeppel, Skymotive, Chicago Robert W. Scott, Continental Radio Houston.

Charles B. Shaw, Jr., Airborne Communications, Cincinnati; Harry Shulman, B-H Aircraft, Burbank; Al Sostar, Dot Airtronics, Lindenhurst, N. Y.; H. A. Thomas, ARM Service, Miami; John C. Shaw, Southern Flight Service, Charlotte; Lowell Wilson, Wilson-Wylie Co., Kansas City; and Elliott Polansky and George Sutton, Dare Radio, Troy, Ohio.

PRICE RANGE OF FRENCH TWIN-JET 4-PL. MS-760 PARIS is indicated by deal Morane-Saulnier of France made with Argentines for 48 of the planes. The $7,142,857 contract provides that the planes constructed in France are to be delivered as components and assembled in an Argentine factory. This is equivalent of $148,600 each. First delivery will be in March, 1958.

COMPLETE ELECTRONIC SERVICE



DARE

narco
NATIONAL AERONAUTICAL CORPORATION

FLITE-TRONICS, inc.

COLLINS

wilcox
ELECTRIC COMPANY, INC

RCA

THE NAME Bendix MEANS QUALITY

ARC

SPERRY

Around the all-inclusive electronic services of Ohio Aviation are the finest aircraft products made. Our reliable equipment, plus expert installation and maintenance service are reasons why hundreds of operators automatically return to Ohio Aviation for every new equipment, installation and maintenance requirement. When you are in need of specialized assistance consider these Ohio Aviation specialties.

NEW EQUIPMENT. We are distributors for leading lines of radar, navigation and communication equipment. We will plan and install this equipment in any combination to your specifications. Pre-planning of the installation reduces the loss in valuable flying hours.

MAINTENANCE. Leading business aircraft owners habitually come to Ohio Aviation for periodical repair and maintenance service. Work is done by many specialists operating on CAA license approval Class 1 and 2. We're fully equipped to service all types of equipment.

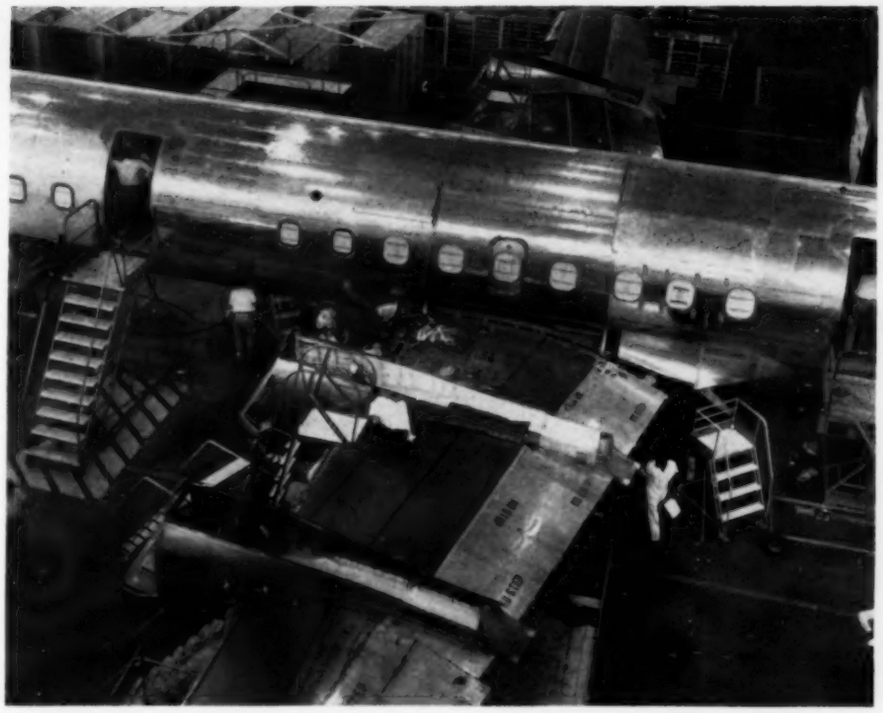
CENTRALIZED RADIO PANEL. This is a feature of Ohio Aviation service. Control heads and switches are adequately marked, easy to locate and see in our edge lit control panel. Write Fred Aubry for detailed information.

Rely on Ohio Aviation for the finest in aircraft service. Call us today at Vandalia MO 4-4646.

THE OHIO AVIATION CO.

Dayton Municipal Airport
VANDALIA, OHIO

FIRST LOCKHEED ELECTRA TROPJET AIRLINER passed another construction milestone last month when fuselage and wing were mated at Burbank. Its 99-ft. wing will carry 5,360 gals. of fuel. The 400-mph. airliner seats up to 91 passengers. First flight is scheduled by January 31.
—(Lockheed Photo.)



HANGAR BUSINESS

(Continued from page 60)

Oakland and Salinas, Calif., Aero Commander distributors.

COLLINS RADIO has reorganized and enlarged its aviation dealer network for more sales and servicing. Sales Manager E. C. Whitaker said 23 factory dealers are authorized to sell direct, 13 of which have been named distributors to 77 additional dealers. This brings the total dealer-distributor network to 113 as compared to 25 originally. Distributors include Airmar Radio Service, Ronkonkoma, N. .Y; Smith-Meeker Engineering, Teterboro and Westchester Airport at White Plains, N. Y.; Atlantic Aviation Services, New Castle, Philadelphia, Teterboro and Boston-Logan; Reading Aviation Service, Reading, Pa.; Page Airways, Rochester, N. Y.; Piedmont Aviation, Winston-Salem, N. C.; Ohio Aviation, Dayton; Navco, St. Louis; Minnesota Airmotive, Minneapolis; American Airmotive, Miami; Associated Radio, Dallas; Continental Radio, Houston, and Spartan Aircraft, Tulsa. Whitaker said all Collins aviation sales dealers and distributors will fulfill equipment warranties.

FAULKNER AIR RADIO, Houston, has opened another shop located in the Poelman Aircraft hangar on New Orleans Airport in Louisiana. Ben Hines, formerly of Superior Radio, is general manager of the New Orleans shop, which will be operated to the same standards as are followed in the Houston shop.

PACAERO ENGINEERING, Santa

The facilities of Executive Aircraft are completely modern and the craftsmen are of the highest skill. Whatever is required, the job done by these craftsmen means your ship will perform more efficiently—with greater safety and comfort.

Call, wire or write

FLEET OPERATORS KNOW THEY CAN DEPEND ON EXECUTIVE AIRCRAFT SERVICE, INC.

for all operations from inspection to major modification

Whether it's a 100-hour inspection, major modification or any other major service work, fleet owners know the work done by the craftsmen of Executive Aircraft Service, Inc. is of the highest caliber. They have become accustomed to the attention to detail that means dependable and safe maintenance which is a mark of pride with these craftsmen. They have learned, too, that their planes are delivered on time from the shops of Executive Aircraft. That's why satisfied customers are our best recommendation. That's why we are now serving fleets for some of the nation's leading concerns. Why not send us your specifications for quotation or let us formulate your plans, specifications and layouts for you.

EXECUTIVE AIRCRAFT SERVICE, Inc.

Garland Airport • P. O. 7307 • Dallas, Texas • Telephone: DAvis 1-2675

Monica subsidiary of Pacific Airmotive Corp. has become exclusive U. S. distributor of Spraymat, a patented system for electrical de-icing and anti-icing developed by D. Napier & Son, Ltd., of England. A typical installation includes spraying aircraft surfaces with a base of insulating resin, a layer of metallic heater element sprayed on, and a final protective coat of insulating resin. The result is a mirror-like finish only 1/20 in. thick and weighing about three-tenths of a pound per square foot. There are no moving parts. The coating is impervious to fuels and lubricants and is resistant to dust, rain and ice. It can be sprayed on highly-complex shapes and curves and in varying thicknesses for varying degrees of heating.

HORTON & HORTON, Meacham Field, Ft. Worth, spruced up Life and Casualty's Lodestar from Nashville with new seat upholstery, forward area rework, complete shampooing, autumn walnut Formica conference tables and modern print draperies. Crew is Robert Stone, pilot; George Shotwell, co-pilot. . . . Kenneth Buis brought in his Forest Oil D18 from Houston for interiorizing replete with off-white grasscloth vinyl-leather headlining, ice-green and cocoa-beige seats, custom-dyed green carpet with built-on sponge underlay, Super Skyhamper toilet in lieu of a 5th seat and green bubble-type double windows. . . . Mrs.

PORTABLE 2-WAY VHF RADIO for communications is the "Multiphone" produced by Skycrafters Aviation Radio, Long Beach, Calif. Snap-on base offers either dry-cell battery power or multipower pack for 6 or 12 volts DC or 115 volts AC.

H. W. Morrison (Morrison-Knudsen, Boise, Idaho) chose a pearl grey gabardine headlining, special-made grey Plexiglas translucent Formica for bulkheads, cabinets and work tables; hand-print rose, grey and gold draperies for her DC-3. George Oswald and Steve Sandmeyer supervised installation of Madsen high-intensity strobe anti-collision lights. . . . A Lodestar custom interior for Burnet Estates and Windfohr, Ft. Worth Charles Baudoux, pilot, features Danish brass door handles, plastic forward door and bulkhead imbedded with semi-precious stones; club-size swivel seats, sliding black anodized cloakroom doors; white and gold Formica lavatory; gold-anodized perforated aluminum sidewalls and hand-woven carpeting with 2-in. foam underlay.

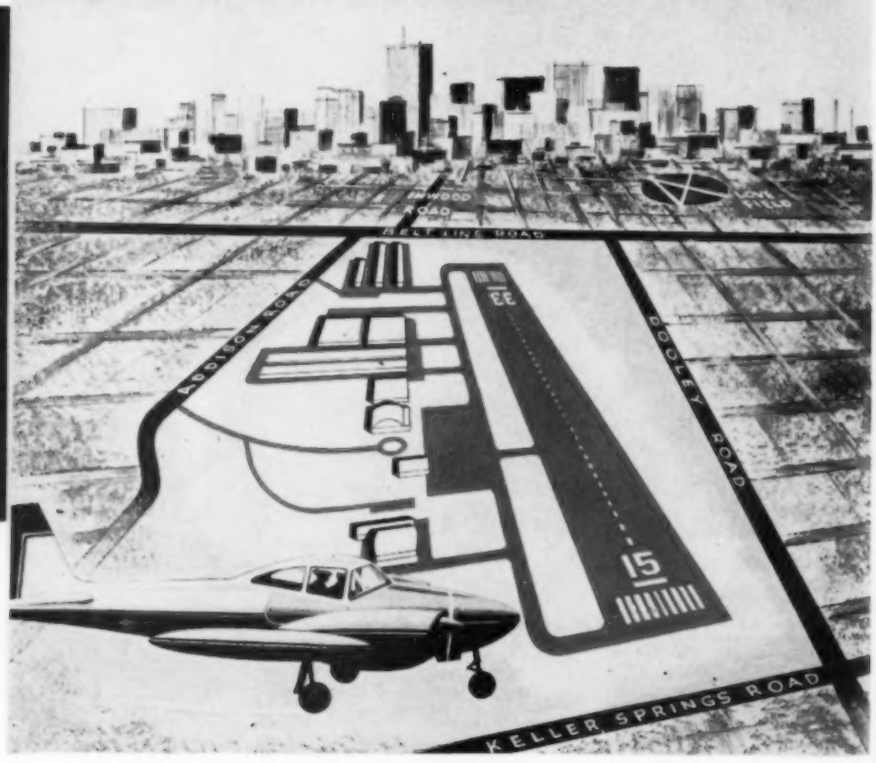
DISTANCE MEASURING EQUIPMENT (DME) SERVICE is available at any time from several firms listed by Narco as authorized DME service agencies. They are Associated Radio, Dallas; Atlantic Aviation, Teterboro; Bayaire Avionics, Oakland; Bohling Aircraft, Chicago-Midway; L. B. Smith Aircraft, Miami; Matthews Electronics, San Antonio; Minnesota Airmotive, Minneapolis; Piedmont Aviation, Winston-Salem; Qualitron, Burbank; Reading Aviation Service, Reading, Pa., and Usher Aviation, New Haven. In addition to the foregoing, the following are available for DME service on a limited basis or by appointment: Aerotron Radio Sales, Tulsa; Airborne Communications, Cincinnati; Anderson Aircraft Radio, Detroit City; and Aviation Radio, Milwaukee. Factory DME

NOW OPEN

for EXECUTIVE, BUSINESS and PRIVATE OPERATORS

The NEW Addison Airport

4,500-foot Asphaltic Runway,
150°-330° Headings
Complete Ground, Ramp
and Flight Service
122.8 Megacycles Unicom
Terminal and Restaurant Facilities
13 Miles from Downtown Dallas
Hangar Storage



ADDISON AIRPORT

P. O. BOX 14201 • DALLAS, TEXAS

service to back up competent field service agencies is available until further notice, but a severe factory test load makes necessary a 30-day allowance, says B. R. Rashkow, sales engineer.

FLIGHT SAFETY FOUNDATION, 468 Fourth Ave., New York 16, N. Y., has just published an excellent booklet, "Ramp Service," as a companion piece to "Aircraft Fueling." It is a well-illustrated guide to operators desiring useful tips on servicing and is available at 50 cents per copy, with discounts for quantity orders.

A NEW FLIGHT INFORMATION MANUAL, Volume 11, by the Civil Aeronautics Administration includes a series of sketches showing various approach lighting systems over the country; definitions of restricted, prohibited, caution and warning areas over which flying is prohibited; radar weather advisory service — what it is, who can use it and how to use it; information on what the pilot should do in emergencies such as an aerial attack and a description of the Washington, D. C., high-density zone around the airport, along with flight rules to be followed in the area. The Manual is for sale for 50 cents at the U. S. Government Printing Office, Washington 25, D. C.

THE AIRCRAFT SERVICE ASSOCIATION has appointed Thomas Wolfe executive director. Identified with aviation for 33 years, Tom Wolfe formerly was president of Pacific Airmotive. The Aircraft Service Association is made up of leading aircraft maintenance and overhaul companies and is headed by Douglass Johnson of Aircraft Engineering and Maintenance, Oakland, as president; Winston Castleberry of Southwest Airmotive, Dallas, vice president, and Max Balfour of Spartan Aircraft of Tulsa, treasurer. Wolfe's office and the group's headquarters are at 530 West 6th St., Los Angeles 14.

THIRTY YEARS OF AIR EXPRESS have brought growth and progress since the first shipments were carried in September, 1927. Here's a Model T Railway Express Agency truck and a Boeing airliner in a typical loading scene of the late Twenties.

PIEDMONT AVIATION, Winston-Salem, N. C., has been named authorized distributor by Wilcox Electric Co. for its airborne communications and navigation equipment. L. A. Watson is superintendent of communications for Piedmont.

NEW RCA AVR-200 MARKER BEACON RECEIVER weighs 3 to 4 lbs, fits a short ¼ ATR rack, uses printed circuit with plug-in modules, split-rivet terminals, 21 transistors and has no relays. It will be available early in 1958 for either 115 V ac or 28 V dc and the power input requirement of the 28-volt version is only 35 milliamperes — less than that required for the 150-ma. bulbs in the 3-light indicator. This is RCA's fourth custom aviation product, others being the AVQ-10 and AVQ-50 airborne

IF you have anything to do with airplanes or helicopters, then you probably have something to do with Engines . . . AND IF you have anything to do with Engines, you *SHOULD* have something to do with *DALLAS AIRMOTIVE.*

Member National Business Aircraft Association

Home of Reliable Engines

DALLAS AIRMOTIVE INC.

6114 FOREST PARK ROAD FLeetwood 1-3771 • DALLAS, TEXAS

Washington Office:
Woodward Building
733 15th Street, N. W.
Washington, D. C.

New York Office:
1219 Marine Terminal Building
La Guardia Station
Flushing 71, N. Y.

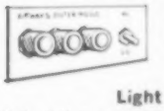
Better Performance
Lower Current Consumption
Greater Reliability
Lighter Weight

DARE DM-3

TRANSISTORIZED
MARKER BEACON
RECEIVER

A unique transistorized circuit gives the DARE DM-3 tremendous advantages over ordinary marker beacon receivers. All moving parts have been completely eliminated. Dynamotors, vibrators, relays all have given way to the more efficient, more reliable transistors. Result: a sensitive, compact, light-weight receiver you can always rely upon. See it today at your DARE distributor.

Visual-Aural Indication



Operates external 3-light indicator. Simultaneous audible and visual signal with minimum signal input.

Light Weight

Only 5.9 pounds, including power supply. Fits ¼ ATR short length rack. Modular construction for easy servicing.

Sensitive, Crystal-Controlled Circuit

Assures receiving the desired signal without interference from unwanted signals. Requires only 1 ampere at 27.5 volts, or 2 amperes at 13.75 volts.

Meets CAA-TSO C-35 Requirements

DARE
INC.
TROY, OHIO

Manufacturers of a Complete
Line of Aircraft Communications
and Navigation Equipment

radars and a radar transponder.

PROPJET ENGINE AND PROPELLER TRAINING SCHOOL is being conducted at Winston-Salem, N. C., by Piedmont Airlines for all its flight and maintenance personnel as one phase of preparations for 1958 delivery of 12 new 36-passenger Fairchild F-27 airliners. Both pilots and mechanics take six 8-hr. days of classwork covering Rolls-Royce Dart engine construction, function, operation, schedule servicing and handling technique. In addition, maintenance personnel take another 8 days of instruction in practical servicing, trouble shooting and control adjustments. The curriculum and aids including cutaway models, are the same used at Rolls-Royce's school in England.

THE WORLD'S LARGEST EXCLUSIVELY-EXECUTIVE AIRPORT, Addison Airport in Dallas, will have its formal opening on October 18 with elaborate ceremonies and about 100 visiting planes of the All-Texas Air Tour. The $2,291,000 facility for business planes, 8 miles north of Love Field, has a 4,500-ft. paved runway, clear approaches, lighting and 24-hr. operations, Collins TVOR omni will be installed, a 5,000-sq. ft. terminal building with restaurant, weather teletype service, restrooms and offices, several 160-by-160-ft. hangars, 150 T-hangars and complete servicing facilities. Operators will include Collins Radio, Delhi-Taylor Oil, Associated Radio, Dal Tex Aviation, J. R. Gray Co. and others.

EAST COAST AVIATION at Bedford Airport, Lexington, Mass., celebrated its 25th anniversary recently. John T. Griffin is president. The firm used the celebration to dedicate its new $300,000 hangar and shops. Griffin started the operation in 1932 with one airplane and one student. He now operates one of the largest approved aircraft and engine technical schools in the country and the largest pilot training school in the Northeast. Its sales division represents Piper Aircraft and Hiller Helicopters and its airborne sprayers division is the oldest and largest agricultural spray and dusting operation in New England. Its marketing and manufacturing division distribututes a large variety of aeronautical accessories and equipment.

AVIATION USEFULNESS will be found for a new Philco 7-band, 9-transistor portable shortwave radio weighing 20 lbs. It will receive weather broadcasts.

SAFE FLIGHT INSTRUMENT CORPORATION has named two new distributors for its stall warning and speed control equipment. They are the Don Horn Co., Memphis, and Alaskan Aircraft Equipment Supply at Anchorage.

SOUTHWEST AIRMOTIVE at

Why did Champion choose McCauley as standard equipment on the Tri-Traveler?

Bob Brown, Champion's President (shown above) **says: "McCauley was selected for performance—speed—durability—safety and acceptance."**

For the best propeller—insist on a McCauley fixed pitch or constant speed propeller.

See your McCauley Distributor or Dealer, or Airport Operator for your new McCauley today!

McCAULEY INDUSTRIAL CORPORATION
1840 HOWELL AVE.
DAYTON 7, OHIO

"World's largest manufacturer of metal propellers for personal and business aircraft."

Dallas, Denver and Kansas City has been named distributor for General Logistics, a subsidiary of Aeroquip, makers of load control and tie-down equipment.

APACHE AIRLINES, Tucson, Arizona, is operating an intra-state airline between Tucson and Ft. Huachuca with Beechcraft Bonanzas, electronics firms being the chief users because of Ft. Huachuca being the Army's electronics proving grounds. The 20-min. hop costs $5.15 and eliminates a two-hour trip by auto. R. E. Winsor is manager of traffic and operations and honors all airline credit cards.

AIRESEARCH AVIATION SERVice division of the Garrett Corp., Los Angeles International Airport, has delivered the Martin Company's Convair 440, which received additional wing tanks, executive interior, auxiliary power unit and miscellaneous radio work. . . . Schenley Industries' DC-3 was brought in by Pilots A. I. Rahm and J. Downing for a 100-hr. inspection. . . . Ladish Company's DC-3 was in for Maximizer installation, 100-hr. inspection and new deicer boots, with Chief Pilot Larry Harder supervising the work. . . . The Union Carbide Convair 440 was returned after having Bendix radar as well as 440 modification and bulletins installed, an exterior paint job, radio and extensive interior work. Capt. Charles Maynard and Maintenance Superintendent Ted Wilde took delivery. . . . Oliver Field's D18S is in the shop for new exterior paint job and miscellaneous work. C. E. Clark is pilot.

REMMERT-WERNER, Lambert Field, St. Louis, has delivered a newly-converted Super-92 DC-3 to Holliston Mills of Norwood, Mass., and Kingsport, Tenn. It has a retractable tail wheel and the latest instrumentation and radio, including Collins 17L transmitter, dual Collins 51R omni, Collins 51V glide slope and flush-type Bendix ADF loops. John Briggs is chief pilot. . . . Ed Brewer brought in the Big Three Welding Super-92 DC-3 for a double engine change and prop overhaul. He says that after 850 hrs. at 700 hp., gas consumption was 104 gph. . . . Peabody Coal's Super-92 DC-3 received new birdproof windshields and a double engine change. Chief Pilot Bob Boyanowsky ran the Super-92 engines 900 hrs. at 675 hp., averaging 100 gph. . . . Dick Turner brought in the Packer Corp. Mallard for double engine change and installation of an ARC 21 lightweight ADF. . . . Shelby Maxwell's Burlington Mills Super-92 DC-3 was in for double engine change and new lightweight R-W landing gear doors. . . . Pete Beard had the Mead Johnson DC-3 in for annual relicense. . . . Ralph Piper's Monsanto Chemical DC-3, "Prairie Wings," was in for a new paint job. . . . Stan Bush took

Left to right are F. H. Isaacks, Manager of Cameron's Southern Louisiana Division; Roy Davis, Domestic Sales Manager, and Herbert Allen, Vice President and General Manager of Cameron Iron Works, Inc.

Seaplane Speeds Service, Cuts Costs for Cameron

CAMERON IRON WORKS, INC., Houston, Texas, manufacturers of high-pressure, off-shore drilling controls and well-head equipment, use their Cessna 180 on Edo Amphibious Floats for sales and off-shore service.

"This plane enables us to serve off-shore installations in the shortest time possible," says Herbert Allen, General Manager. "We are now able to make 10 calls in the same time previously required to make one.

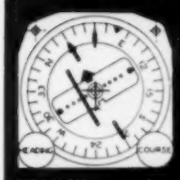
"In addition to saving us valuable time, our Amphibian has enabled us to reduce service expense. The cost on the crew boats previously used was $65 for an 8-hour day. The plane operates at a cost of $22.46 an hour, but in that hour we are able to do what used to be a full day's work."

EDO, WORLD'S FOREMOST MANUFACTURER OF AIRCRAFT FLOATS, makes a complete line of standard and amphibious floats for many types of airplanes. Could a versatile, rugged seaplane assist in your business? See your nearest EDO Float dealer or write for details to:

Edo SINCE 1925

CORPORATION
College Point, Long Island, New York

AT ASSOCIATED RADIO



THE BEST

Is Smaller and Lighter

Better performance, more dependability, simplified instrument presentation, less weight, less power drag, less rack space—these great accomplishments are available now from ASSOCIATED RADIO with the newest and latest communications and navigation equipment.

Collins, Sperry, RCA, ARC, Dare, Comco, Flite-Tronics, Sun-Air and Electro-Voice—from these leaders we stock the most modern developments.

If you are hauling around too many pounds of unnecessary weight . . . sacrificing needless space and electrical loads . . . for less than optimum performance, ASSOCIATED RADIO solicits an opportunity to eliminate your handicaps.

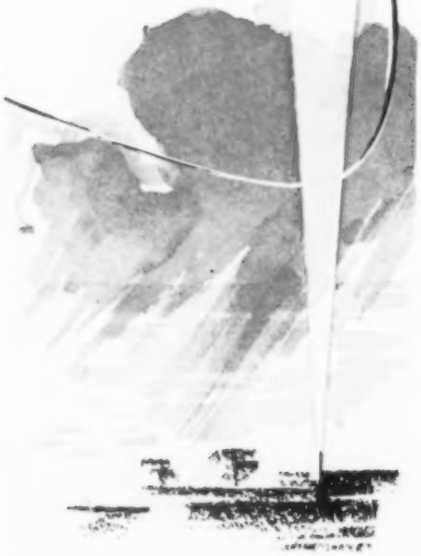
ASSOCIATED RADIO CO.
CUSTOM DESIGN
LOVE FIELD
DALLAS

FLeetwood 7-2891

We are CAA Repair Station No. 3664, Radio Class 1, 2, DME and Limited Radar.

DEPENDABLE

Sales
Installation
Engineering
Maintenance



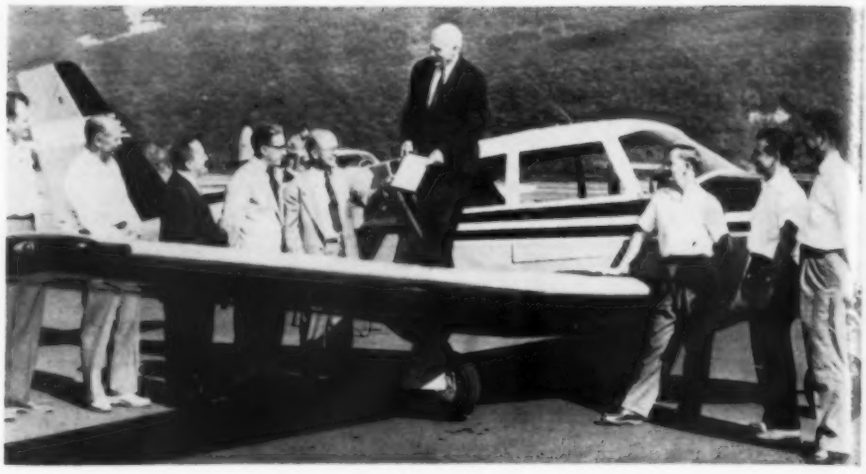
Most dependable by F A R

. . . Avionics by Faulkner

Faulkner Air Radio
HOUSTON, TEX.
INTERNATIONAL AIRPORT

Now at

New Orleans Airport too.



PROUD FATHER OF A NEW AIRWORTHINESS CERTIFICATE is W. T. Piper, shown displaying the CAA document for his new 180-hp. 4-place Comanche, which has a top speed of 167 mph. and cruises at 160 mph. at 75 per cent of power. —(Piper Photo.)

the Lake Aircraft's Custom 18 to Remmert-Werner in Toledo for annual relicense and engine change.

LOCKHEED JETSTAR COMMERCIAL SALES MANAGER is B. B. Bundesman, according to R. J. Mitchell, sales manager of the Georgia division of Lockheed. Bundesman was formerly sales manager for B-47 modification and special projects at the Georgia division.

LAND-AIR, INC., at Cheyenne, Wyoming, has been issued CAA Certificate No. 3937 as a certified repair station. The firm is expanding from military projects into commercial activities, its first job being the completion of a zero-time overhaul and modification from cargo to passenger version of a C-54 for Air Viet-Nam. J. T. Shelton is vice president and manager.

BIG or SMALL

they all SHINE BEST
SHINE LONGER
SHINE EASIER with

NEVR-DULL
Aluminum Cleaner and Polish

The original chemically-impregnated cotton wadding — Cleans quicker, gives higher, longer-lasting gloss, leaves protective film. Saves time, labor and money! Avoid inferior imitations.

AVAILABLE AT LEADING DISTRIBUTORS

MANUFACTURED EXCLUSIVELY BY
George BASCH Co.
19 Hanse Avenue, Freeport, L. I., N. Y.

ANDRAU AIRPARK, INC.

- 24 HOUR OPERATION
- 2 LIGHTED RUNWAYS — 4714'
- 80-90-100 OCTANE GASOLINE
- LOW FREQ. HOMING BEACON 269 kc AAP
- COMPLETE MAINTENANCE SERVICE
- RESTAURANT
- 15 MILES DUE WEST OF HOUSTON
- AVIS RENT CARS ON FIELD
- CANAL FOR SMALL SEAPLANES — RUNS EAST-WEST

HELENE B. WOLFF
Owner & Mgr.

Andrau AIR PARK
HOUSTON

"WILD AND WONDERFUL" is title of a new Universal-International movie based on the flying of Mary and Jack Ford. Ford (right, above) operates a ferry service, Fleetway, Inc. Star is Jeff Chandler, left. Next to him is Jack Arnold, director and a pilot. Richard Denning, by Ford, is navigator.

CESSNA FORMULA

(Continued from page 46)

the down payment would be $800 with monthly payments starting at $248 and reducing each month until a 24-month period is ended, the balance becoming payable as the 24th payment.

This type of financing will assist new dealers in getting started. A leasing arrangement will help dealers place new airplanes in the hands of independent airport operators with low monthly payments, two-year terms being suggested for operators.

Cessna, according to Roskam, believes the recent Curtis Report prediction for a general aviation fleet of about 106,000 airplanes by 1975 is very conservative. He feels there will be several thousand additional airplanes in the fleet at that time, basing his belief on the current rate of industry sales and the anticipated needs for the future.

Roskam also believes the industry has slighted student pilots. "Teaching people to fly is an important facet of our business and industry, because people who learn to fly are our future customers," he says. Air education needs continued emphasis.

$1785.00

180 CHANNEL VHF TRANSCEIVER

118.0 to 135.9 MC

- All Accessories, Crystals, Antenna and Connectors furnished wired and assembled ready to install.
- Installed weight only 23 lbs.
- Transmitter power an honest 5 watts radio output.
- Size is standard ½ ATR.
- Remote Control Head is Airline concentric type.

SPRINGER AIRCRAFT RADIO CORP.

Sky Harbor Airport
Route 11, Box 330
Indianapolis 19 Indiana

STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233)

Of FLIGHT MAGAZINE published monthly at Dallas, Texas, for October 1, 1957.

1. The names and addresses of the publisher, editor, managing editor, and business manager are: Publisher and Editor, George E. Haddaway, 2700 North Haskell Ave., Dallas, Texas; Managing Editor, Tom Ashley, 2700 North Haskell Ave., Dallas, Texas; Business Manager, Fred N. Stones, Jr., 2700 North Haskell Ave., Dallas, Texas.

2. The owner is: Air Review Publishing Corp., 2700 North Haskell Ave., Dallas, Texas; Stockholders holding 1 per cent or more of stock: George E. Haddaway, Dallas, Texas; Tom Ashley, Dallas, Texas; Fred N. Stones, Jr., Dallas, Texas.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

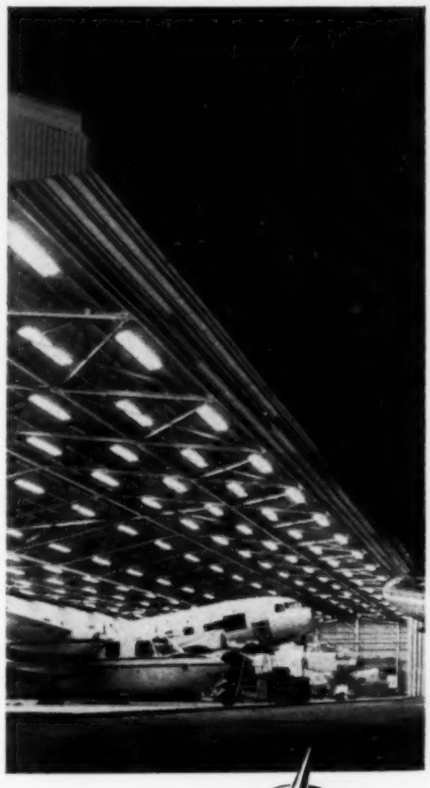
4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustee, hold stock and securities in a capacity other than that of a bona fide owner.

AIR REVIEW PUBLISHING CORP.
FRED N. STONES, JR., Business Manager

Sworn to and subscribed before me this 25th day of September, 1957.

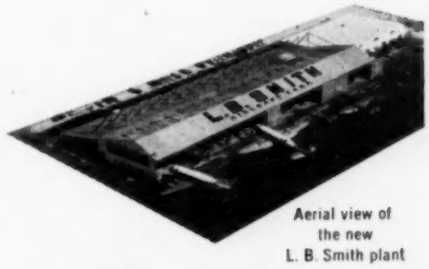
MRS. LOUISE ROBERTSON,
Notary Public
(My commission expires June, 1959)

(SEAL)



vastly expanded new facilities

L. B. Smith's new 80,000 square foot hangar building houses the most advanced business and commercial aircraft sales, service, conversion and manufacturing facilities available in this hemisphere. Personalized customer service for the business pilot and plane owner provide for your every need . . . including complete flight planning data, lounge, coffee shop, office facilities with secretarial help, hotel reservations and car rentals. We invite your inspection of these new facilities.



Aerial view of the new L. B. Smith plant

L. B. Smith

AIRCRAFT CORPORATION
International Airport • Miami, Florida

WHAT ?? WHERE HOW MUCH $

IFR HOOD

First in Safety! First in Comfort!
First in Pilot's Choice

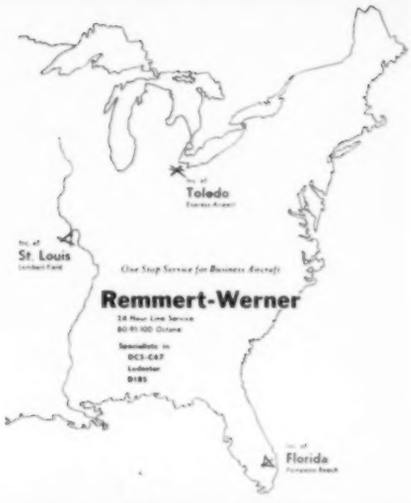
The modern method of simulated instrument flight for training and maintaining proficiency.

$15.00 at your Airport or

FRANCIS AVIATION

Box 299 Lansing, Michigan

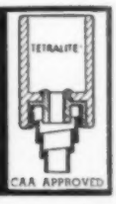
Arizona's Airport
TUCSON



navigate!
communicate!
cogitate!

WHILE YOUR GLOBE AUTOPILOT FLIES

NON-BREAKABLE
TETRALITE*
SPARK PLUG TERMINAL SLEEVES
FOR THREADED OR STANDARD LEADS
J. E. MENAUGH COMPANY
548 WASHINGTON BLVD., CHICAGO 6, ILL.



CAA APPROVED

NAVCO Inc.
Lambert Field, St. Louis, Mo.
PErshing 1-1710

has in stock

A.R.C. Bendix Collins
Sperry Wilcox
Executive Aircraft Radio

$500,000.00 CASH
FOR AIRPLANES

We'll spend this each month for clean light twins and single engine or complete dealers stocks new or used.
We pick up — no red tape.

VEST AIRCRAFT CO.

EMpire 6-2663

Box 5306 Denver 17, Colo.

Executive Transport Aircraft

All Models — New and Used
We can save you time and money
Sales — Procurement — Trades
Leases — Finances

Welsch Aviation Company
60 East 42nd Street, Suite 729
New York 17, New York, MUrray Hill 7-5884

EXECUTIVE AIRCRAFT • Quick, satisfying results in buying or selling executive planes from large multi-engine thru Bonanzas.

JAI

Phone, wire or air mail
BILL BUCHANAN
MElrose 7-1102
JOHNSON AIR INTEREST
Racine, Wisconsin

Yes - "PRECISION" has
A FULL HOUSE
Everything from the Firewall Forward

Aircraft Engines
Aircraft Propellers
Aircraft Accessories
Kustomer Sales
Kustomer Service

Precision Aeromotive Corporation

International Airport Houston, Texas Phone MIssion 5-4636

Immediate Delivery

We stock, overhaul, and install

PRATT & WHITNEY WRIGHT

R1830 —75, —92, —94
R1820 —202, —56, —72
R985
R1340
R2000

and our most popular DC-3 engine
R1830 - SUPER - 92

ENGINE WORKS INC.

Lambert Field St. Louis, Mo.

IMMEDIATE DELIVERY

now on display in St. Louis

Deluxe Super 92 DC-3

Immediate delivery, with new ship guarantee on airframe, and 800-hour guarantee on engines. Completely disassembled and rebuilt. Luxurious interior, with all large cabin and picture windows. Lightweight landing gear doors, Collins and Bendix executive radio, many extras. Today's fastest and quietest DC-3, 210 miles per hour.

Custom 18

Immediate delivery. New ship guarantee on freshly overhauled airframe, 800-hour guaraantee on NTSO engines. Painted exterior, deicers, radome nose, Grimes Beacon, all large cabin windows, Custom 18 enlarged interior, with modified front bulkhead, lavatory, snack bar, special seats. Dual instrumentation, electric and vacuum, L2 autopilot, Grimes lights, Sperry H5 horizon and C2 gyrosyn compass, dual 149H inverters. Collins 51R omni with 51V glide slope, A.R.C. omni, 50 channel VHF transceiver, standby A.R.C. T20 VHF transmitter, Bendix ADF, 3 light marker, isolation amplifier, dual speakers, many extras.

Grumman Goose

Immediate delivery. Freshly overhauled airframe, props, and engines (with crankshaft modification), new interior, new exterior paint. Lightweight, late model. Omni, VHF, ADF, etc.

Grumman Gooses

Now in early stages of overhaul, ready for your own specifications. On display in Pompano Beach.

Aero Commander

Just taken in trade on a new Remmert-Werner deluxe executive DC-3. A corporation airplane, flown by professional pilots, and given the best of maintenance. Gyrosyn compass, Collins 17L VHF Transmitter, 51R3 Omni and Radio Magnetic Indicator, A.R.C. omni, Bendix ADF, etc.

Low Time C47s

A new one each month. They are now in various stages of disassembly, overhaul, and conversion at our four conversion centers in St. Louis, Toledo, McBride, and Pompano, and can be completed with many of your own modifications, with choice of engines, radio and electronic equipment, and airframe refinement. On display in St. Louis, Toledo, and Pompano Beach.

Super-92 DC-3

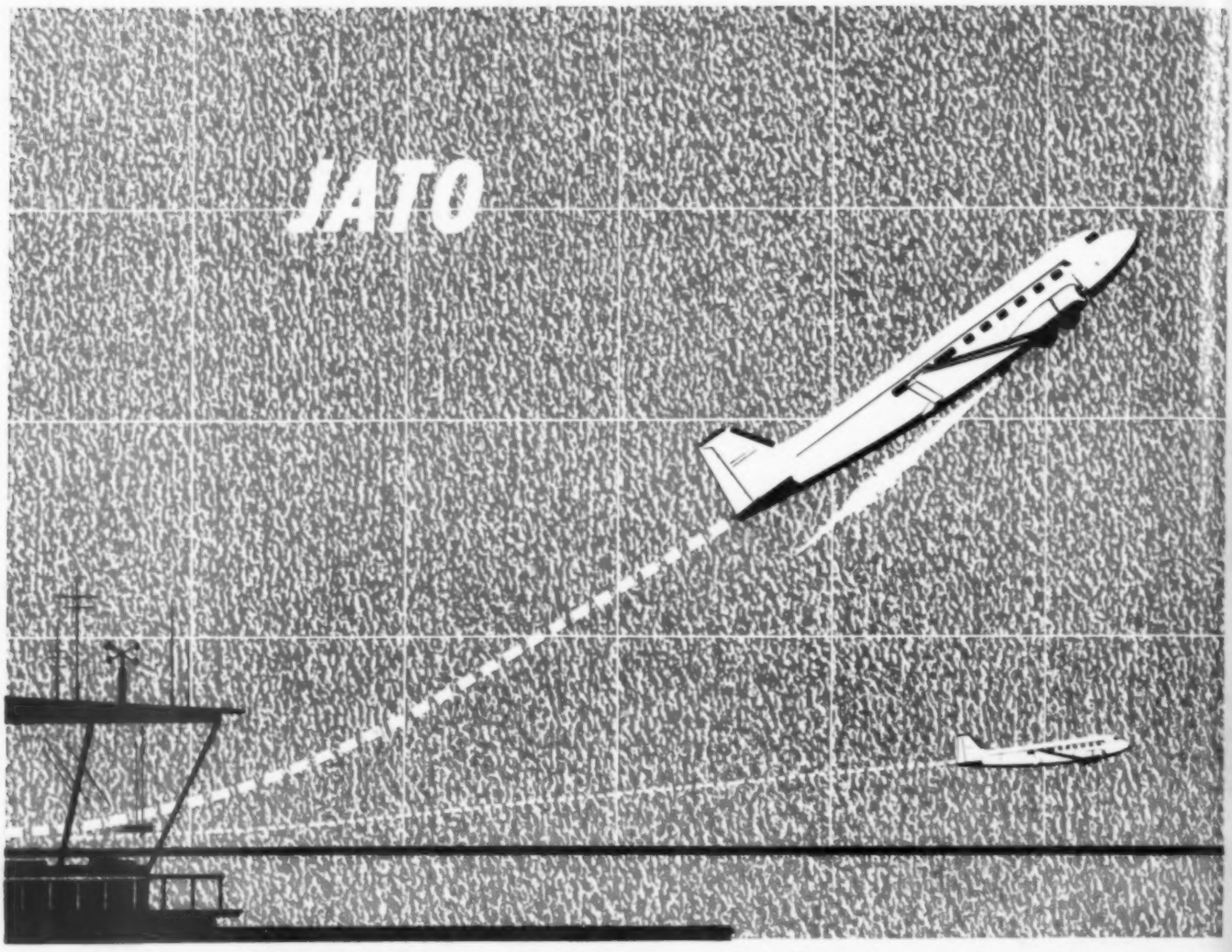
Nearing completion as deluxe Super 92 DC-3 to our own specifications, but still early enough in work to incorporate some of your own custom requirements. Will have all large windows, complete disassembly and overhaul, new ship guarantee, 800-hour engine guarantee.

Remmert-Werner

Inc. of
ST. LOUIS
Lambert Field

Inc. of
FLORIDA
Pompano Beach

Inc. of
TOLEDO
Express Airport



DC-3 • LODESTAR • BEECH • deHAVILLAND DOVE

Now you can obtain the complete installation of the famed JATO, (Jet Assisted Take-Off), for your DC-3, Lodestar, Beech or deHavilland Dove at Dallas Aero Service on convenient Love Field in Dallas.

With JATO, there is safer operation in every respect. JATO is the answer for short field take-offs, take-offs with heavy loads, engine failure, go-rounds, and any other emergency where power — sure and quick — is needed.

Inexpensive JATO is a must for every executive airplane.

Write, wire or call today . . .

DALLAS AERO SERVICE

3300 LOVE FIELD DRIVE • PHONE FL 2-2641 • DALLAS 19, TEXAS

COMPLETE ONE-STOP SERVICE ON CONVENIENT LOVE FIELD